NOVEMBER 1959

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE

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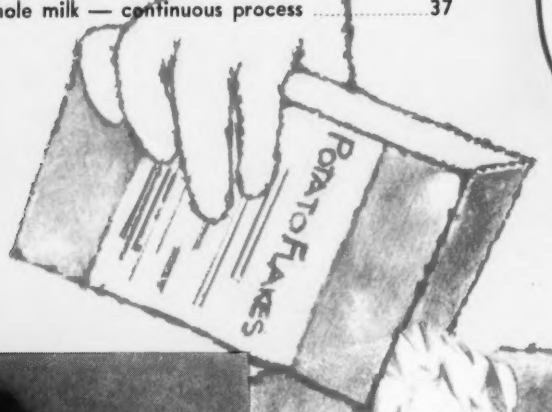
FOOD PROCESSING®



USDA

FOOD RESEARCH develops

- New processes
- New products page 29

Dr. George W. Irving, Jr., Deputy Administrator for Utilization Research and Development, USDA

the copy
MAN PUBLICATION "Executive Magazines for Industry"
lation over 39,000

Planned Packaging moves merchandise

Sold and still selling!

The corrugated container—workhorse of mass distribution—has long been known for its excellent product protection. Now it's fast becoming the Cinderella of packaging. Attractive, tinted background designs—even four-color half-tone printing, pioneered by Packaging Corporation of America—are transforming drab, rubber-stamped containers into eye-catching traveling billboards that sell their contents at every opportunity.

The skillful combination of art and package design is but one of countless ways in which Packaging Corporation of America's concept of Planned Packaging, implemented through integrated national facilities, produces better packaging . . . more sales. Whether your requirements are large or small, regional or national, we welcome the opportunity to help you.

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that's interesting

Farouk should have read this!

Colorful new brochure on the "care, handling and storage of crowns," die-cut in the shape of a large crown, contains step-by-step description of how crowns are made, plus the A-B-C's of their care and handling.

Sample tips — "Keep crowns away from radiators and hot pipes;" "Avoid excessive handling of crowns;" "Don't climb on crown carton." Cartoons by Don Herold add an entertaining touch.

(New brochure on crown care, handling and storage is offered by Crown Cork and Seal Company, Inc., 9300 Ashton Rd., Philadelphia 36, Pa.) 5627 on Reader Service Slip.

"Cultural" exchange nets foreign expert

At request of the US Government, the Food and Agricultural Organization of the UN (FAO) has loaned Dr. Shao-Wen Ling, a world authority on fish culture, to set up an experiment in growing this type "crop" in the Arkansas rice paddies.

If successful, the experiment eventually can be duplicated on a commercial scale on hundreds of thousands of acres in this country, suitable for this purpose, providing an important additional source of food for the greatly expanded population expected by the 1980's.

'Whye' or 'reat' — new grain sows optimism

The first "man-made" grain — a wheat-rye combination that qualifies as an entirely new type — is being tested at University of Manitoba, Canada. Prolific and vigorous, it may enable farmers to produce much more on less land (for a greatly expanding world population).

The new "tailor-made" grain is result of a global search by Canadian scientists for seed of the original grasses from which present-day grains developed, followed by scientific plant breeding. Current problem is to find a use for the new grain, and improve it to suit that use.

It is not known yet whether it will be a flour milling grain.

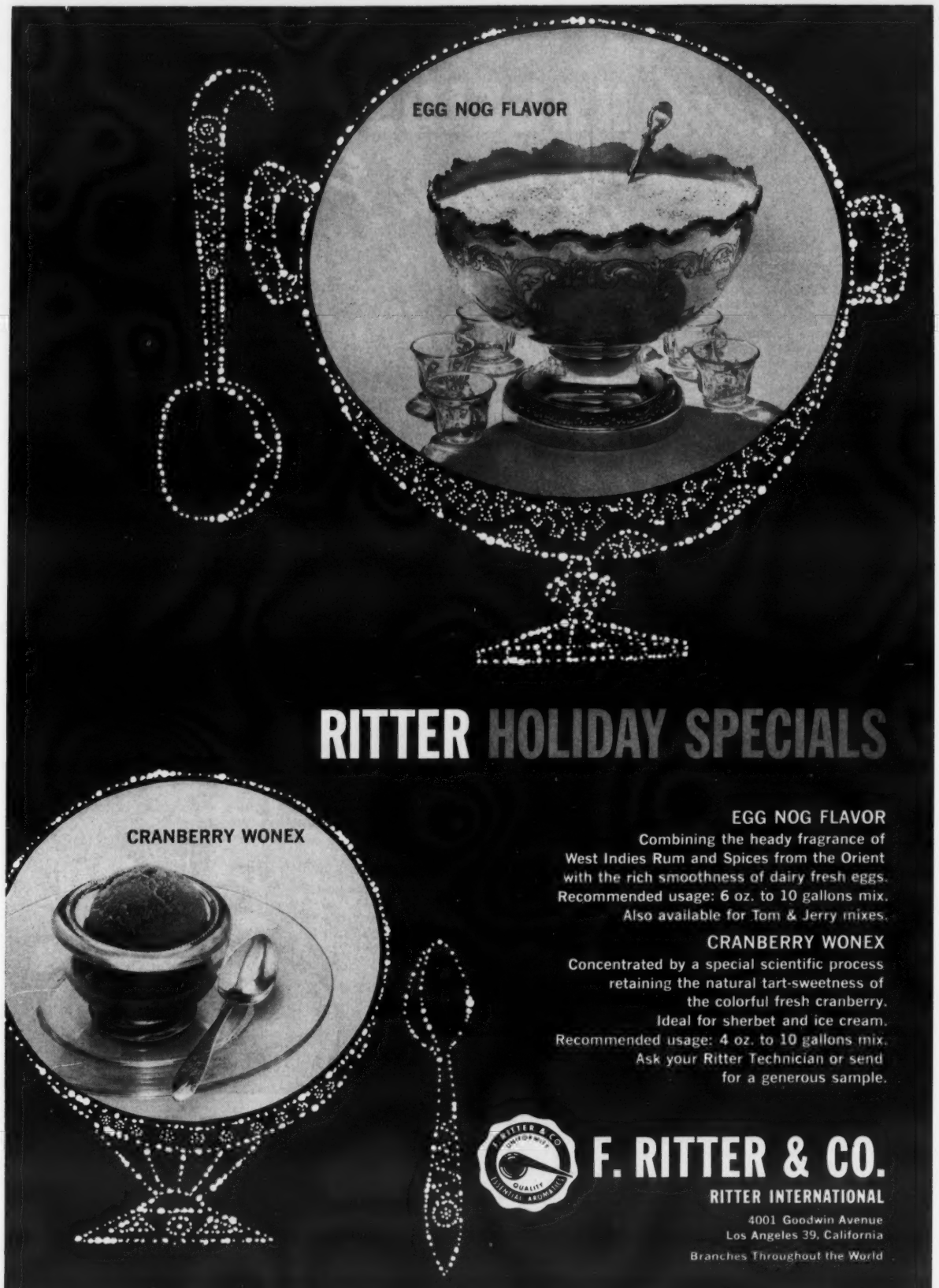
(*MILLING AND FEED*, September, 1959)

Leased fleet idea gathers steam

The company-owned automobile fleet appears headed for extinction, according to study based on company records covering nearly 30,000 cars. Since World War II, number of autos leased by industry has climbed from a few thousand to approximately 240,000 — about 25 per cent of total cars used by industry.

Report's predictions are based on dollar-and-cents comparison of cost of company ownership, salesman ownership and leasing. Unique tables show at what point it is worthwhile for a firm to use working capital to buy an auto fleet, and at what point it is better to lease. Short-term auto "rental" by the day or week and truck leasing are not covered.

(Report — "Advantages and Disadvantages of Auto Fleet Leasing" — 27 pp, is available from The Foundation for Management Research, 121 W. Adams St., Chicago 3, Ill.) 5628 on Reader Service Slip.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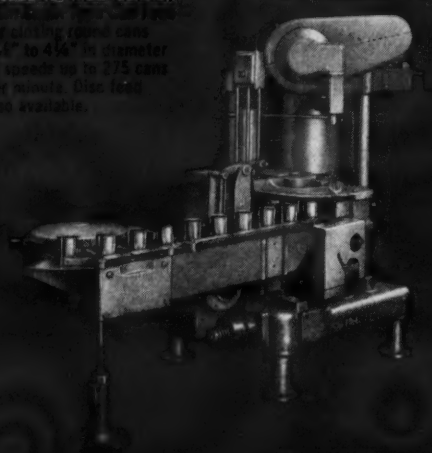

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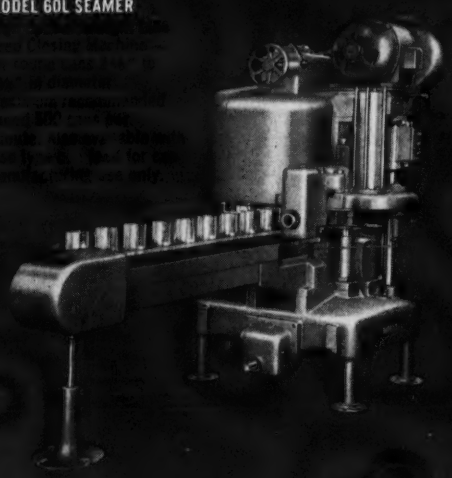

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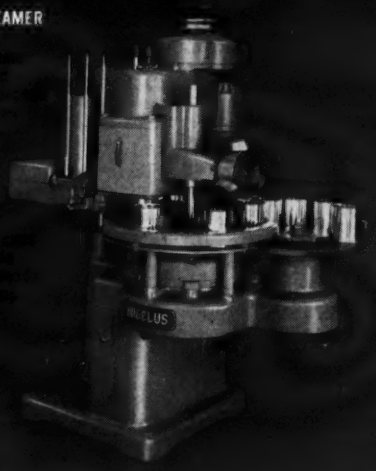

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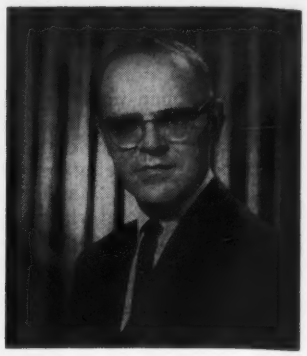
over the editor's shoulder



Sharper lines drawn in fats crisis

What do the various nutrition authorities say regarding fats in foods?

While this remains an unresolved issue, the lines of controversy are becoming more sharply drawn.

All authorities agree that evidence thus far gained from extensive investigation is not conclusive. But disagreements arise over the extent to which any changes in the diet and composition of processed foods is justified from the information available.

Last month we reviewed the controversial issues in a summary presentation.

Just what the experts thought of this review, as well as some additional recent important findings pertinent to the subject, are reported as direct statements in this issue.

You'll find these statements from leading authorities beginning on page 24.

Joe Doorhees

ASSOCIATE EDITOR

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE

FOOD PROCESSING

NOVEMBER 1959
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CIRCULATION OVER 39,000

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Recipe standards have served their purpose. It is time now for more informative labeling — H. P. Milleville, Editor

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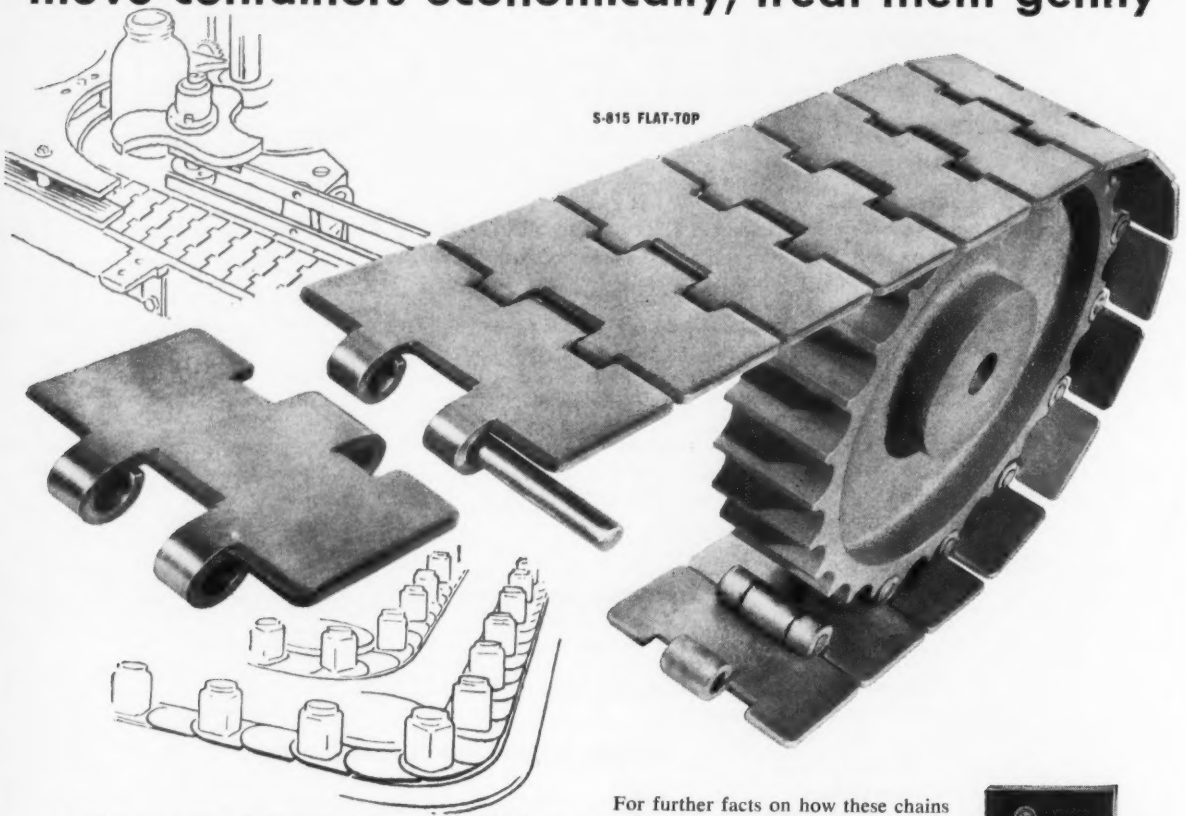

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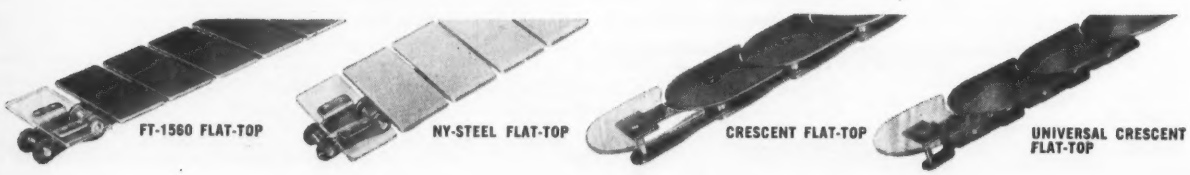

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(Food Processing Preview)

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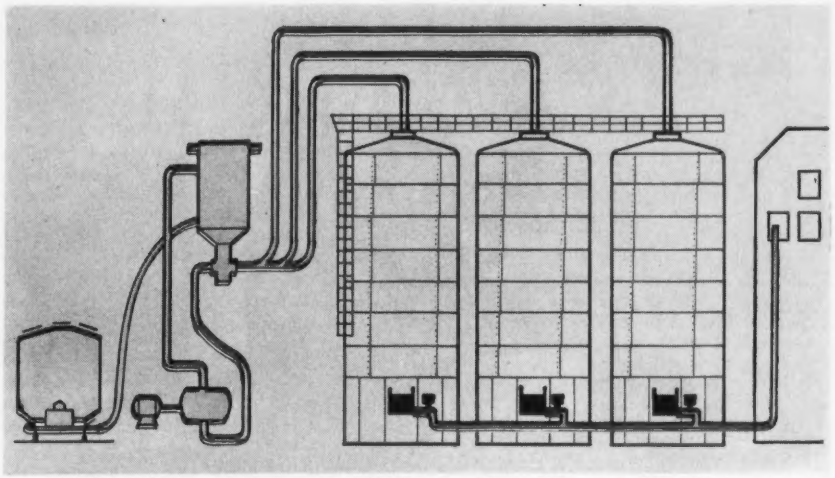
Here's a "TRIPLE-THREAT" to the high cost of handling bulk materials



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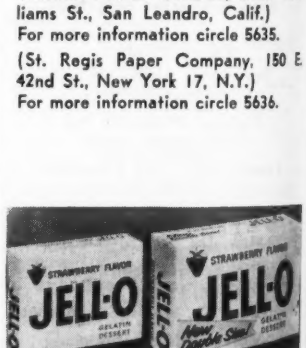

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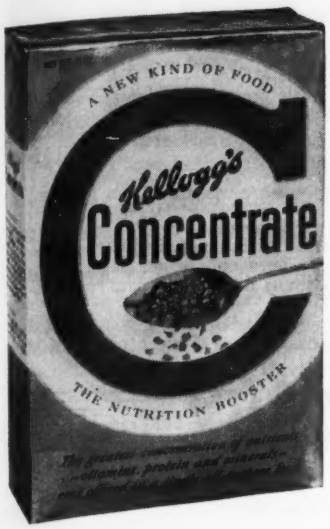

Kellogg's 'concentrates' on nutrition . . .

. . . with power-packed new "Concentrate" . . . marking first entry of a major food firm in the increasingly important nutrition-supplement field. Said to contain the greatest concentration of nutrients ever offered in a general-purpose food (40 per cent protein, plus 11 essential vitamins and minerals), "Concentrate" can be served either by itself as a breakfast cereal, or sprinkled on other cereals and foods for added nourishment. Also, it enhances flavor when sprinkled on casseroles, soups, salads, vegetables and desserts, or when mixed in meat loaves, patties, stuffings, pancakes and waffles. Product contains only 106 calories per oz, virtually no fat — of special interest to weight-watchers, people with finicky appetites, women during pregnancy and all who require a high-protein diet. Six-oz gold-foil overwrapped package of "Kellogg's Concentrate" retails for approximately 49c.

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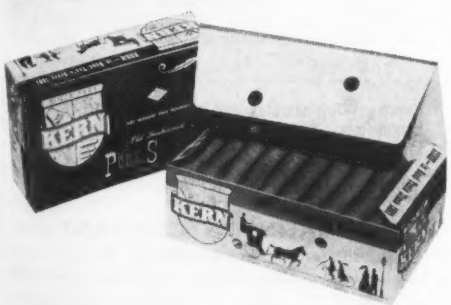
("Metallic Polycel" cello-poly-foil-poly packaging film is development of H. P. Smith Paper Company, 5001 W. 66th St., Chicago 38, Ill.)

For more information circle 5637.



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. . . new five-lb carton with laminated parchment lining replaces former laborious and inadequately protective method of placing franks and sausages in layers with hand-lined and interleaved parchment. Besides providing greater resistance to heat and humidity, parchment lamination adds to carton's structural strength.

(Parchment-laminated sausage carton is development of Berles Carton Company, Inc., 375 Park Ave., New York 22, N.Y.)

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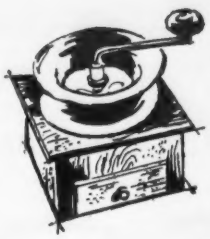

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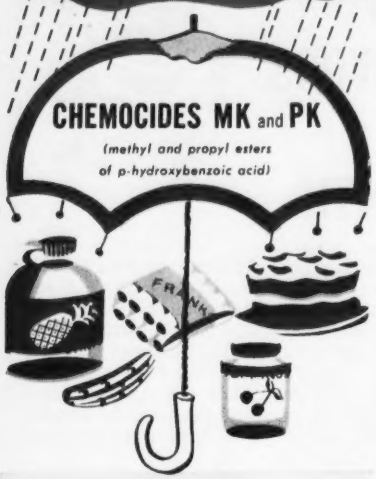

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conventions and exhibits

Nov. 16-19. American Bottlers of Carbonated Beverages, International Soft Drink Exposition, Kiel Auditorium, St. Louis, Mo.

Nov. 17-20. Packaging Machinery Manufacturers Institute Show of 1959, Coliseum, New York City.

Nov. 30-*Dec.* 4. Exposition of the Chemical Industries, Coliseum, New York, New York.

Dec. 26-*Jan.* 3. Dairy and Food Exposition, Coliseum, New York, N.Y.

Jan. 18-23. National Canners Assn., annual meeting (including concurrent Canning Machinery & Supplies Assn. exhibit of canning and freezing machinery, supplies and services), Hotel Americana, Miami Beach, Fla.

Jan. 25-27. National Dairy Council, 45th annual meeting, Hotel La Salle, Chicago, Illinois.

Jan. 25-28. Plant Maintenance & Engineering Show, and concurrent (Jan. 25-27) Conference, Convention Hall, Philadelphia, Pa.

Feb. 12-14. Institute of American Poultry Industries, fact-finding conference and exposition, Municipal Auditorium, Kansas City, Mo.

Mar. 6-9. National Assn. of Frozen Food Packers, 19th annual exposition and annual meeting, Conrad Hilton Hotel, Chicago, Ill.

Mar. 21-24. Institution Food and Supply Show, New York Trade Show Bldg., New York, N.Y.

April 27-30. Western Air-Conditioning Industries Assn., 3rd Western air-conditioning, heating, ventilating and refrigeration exhibit and conference, Shrine Exposition Hall, Los Angeles, California.

May 9-11. Biscuit & Cracker Manufacturers Assn., and Biscuit Bakers Institute, Inc., 57th joint annual meeting, The Plaza, New York, New York.

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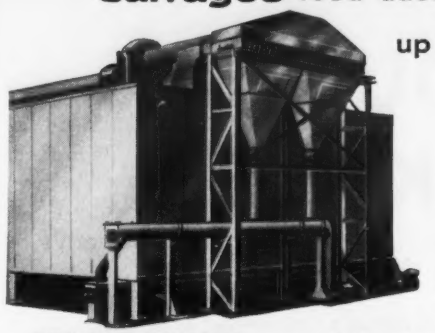

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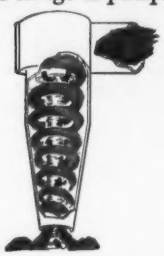
Perfected DUSTEX tubes of cast aluminum provide cling-free, self-cleaning surfaces . . . special contouring to assure maximum material recovery . . . protrusion-free design meeting highest sanitation requirements.

Rugged all-metal construction with no moving parts, no filters to clog, no sludge to pump.



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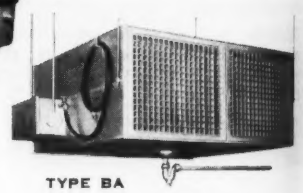

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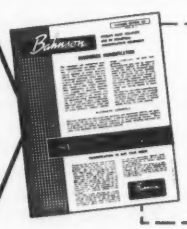

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plants companies personalities

General Foods realigns major management posts!

C. G. Mortimer

W. C. Marks

H. M. Cleaves

C. W. Cook

J. A. Sargent

In a major realignment of top executives at **General Foods, Charles G. Mortimer** has become board chairman. His successor as president is **Wayne C. Marks,** formerly executive vice president.

Mortimer, president since 1954, will continue as chief executive officer, and will concentrate largely on GF's future development and growth. In this connection, he will head a newly created corporate development council.

Marks was designated chief operating officer of the company.

Two vice presidents — **Herbert M. Cleaves** and **C. W. Cook** — have been promoted to executive vice presidents-operations, and each will have six divisions reporting to him.

A third new executive vice president, **John A. Sargent,** will function as chief of staff.

E. Burke Giblin, division operations manager succeeds Cleaves as general manager of the Jell-O division. **Arthur E. Larkin, Jr.,** division marketing manager, succeeds Cook as general manager of the Maxwell House division.

George Hampton, senior executive vice president, has requested a leave-of-absence for health reasons.

James A. Moffett has been elected senior vice president of **Corn Products Company,** and additionally will continue to serve as president of Corn Products International. He is a director of the parent company.

J. A. Moffett

W. R. Junk

Harve Hearl

California and Hawaiian Sugar Refining Corporation has named **W. Ray Junk** director of product development. With the company for 30 years, and a charter member of Institute of Food Technologists, Junk will serve as secretary to the management Research and Development Committee on product development matters.

Harve Hearl, widely known gourmet and recently sales manager of frozen food packaging for Continental Can Company, has joined **Armour and Company's** Special Products division as manager of prepared food development. Hearl has been closely identified with development of "boil-in-bag" frozen prepared foods.

The Pillsbury Company will make its first capital investment outside the North American continent by building a flour mill in Maracaibo, Venezuela. The overseas milling operation will be carried on under a partnership agreement with the Mendoza family — leaders in Venezuela's industrial development.

Pillsbury also has entered into a technical assistance agreement with a Guatemalan mill to produce Pillsbury brands to the specifications of the Minneapolis firm.

G. F. Morrill has been appointed board chairman of the **Borden Company's** Western Division, San Francisco. The division embraces all Borden's dairy and food operations in the Western states. **L. S. Merrill,** a division vice president, succeeds Morrill as president of the division.

Minute Maid Corporation has acquired Tenco, Inc., a major producer of soluble coffee, with average domestic annual sales of approximately $35 million. **Edward Aborn,** president of Tenco, Inc., becomes a director of Minute Maid and president of the firm's Tenco division.

High protein adds sales appeal to your product

USE TORULA YEAST U.S.P.

Never before have women shoppers been so protein- and nutrition-conscious. Leading manufacturers of many food and drug products are discovering that dried TORULA Yeast enrichment helps boost sales.

TORULA Yeast exceeds U.S.P. standards for B complex factors and protein. And the taste is bland for easy blending with your product. Lake States Yeast is produced in sterile media, and constant quality control assures you of purity and stability for long shelf life. Most important of all, TORULA Yeast provides the necessary enrichment at *low cost.*

To obtain complete information and a liberal test sample, write today, stating your application.

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Lake States Yeast and Chemical Division of St. Regis Paper Company
RHINELANDER, WISCONSIN
Dept. FP-11

Sales Office: 420 Lexington Ave., New York 17, N.Y.; or W. Glenn Wunderly Company, 170 E. California St., Pasadena, California; Dillons Chemical Company, Ltd., Montreal and Toronto, Canada

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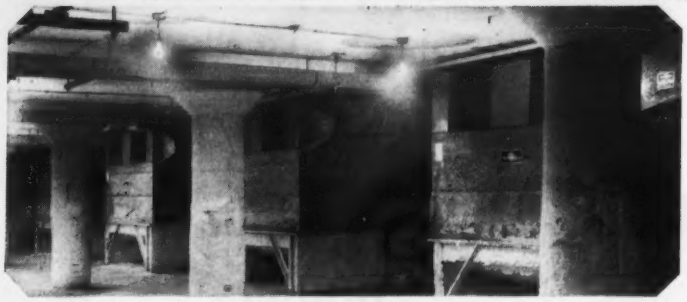
NIAGARA "no frost"



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Write for Bulletin No. 105

NIAGARA BLOWER COMPANY

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District Engineers in Principal Cities

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CY BELT says

"I can eliminate 'time lag' and speed production!"

Too often material in process can go only so far, and then must wait until somebody carries or pushes it to the next stage in the production line. The delay caused by the need for manual handling can frequently be eliminated by a *complete* conveyor system that reduces manual handling to the absolute minimum. Time is saved, unit costs are reduced, and the profit margin is widened. A trained Cyclone salesman can analyze your present materials-handling system to uncover time-wasting procedures, and suggest improvements. His analysis costs nothing, and his recommendation will be tailored to *your* plant and *your* needs. Just fill in the coupon.

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5645 on Reader Service Slip.

food regulations

FDA to Crack Down on Penicillin in Milk

New 3-hour test for presence of penicillin will aid industry's control program

FDA officials are warning the milk industry that accepting and shipping milk contaminated with antibiotic (penicillin) or pesticidal residues can lead to serious trouble.

While there has been a noticeable reduction in the amount of penicillin residue — as a result of a joint industry-agriculture-government education program — further improvement is essential.

Pencillin is necessary to treat mastitis, the most costly disease affecting US milk cattle — and FDA has no intention of prohibiting its use.

Regulatory action, however, will be stepped up. Samples of milk are being collected for examination. And legal actions will be instituted where necessary.

FDA said that health, nutrition and consumer groups have been urging them to act on the problem of contaminants in milk. Most recently, the American Medical Association called upon the agency to "get penicillin out of milk."

Testing for penicillin residues will be quicker now as a result of a new 3-hour method developed by FDA scientists for ordinary laboratory equipment. Details of this new development appear in the October issue of "Journal of Milk Technology." FDA will provide copies on request.

Previously, tests for detecting penicillin in milk required 16 to 18 hours, too long a period for practical control purposes.

Now this new method should provide the dairy industry with a rapid means for identifying producers who are disregarding the directions for use of the antibiotics.

Regarding pesticides in milk, in a speech before the Missouri Cheese and Butter Institute, Shelbey T. Grey, director of FDA's Bureau of Program Planning and Appraisal, had this to say:

"Pesticides get in milk primarily from contaminated forage, and the indiscriminate use of fly sprays on cattle and in barns or milk sheds. There are no tolerances for any of these substances in milk.

"The solution to the problem must ultimately be made at the farmlevel by the manufacturer who buys the milk and by state and local regulatory authorities who visit farm premises."

FDA studies health claims in vegetable-oil ads

Industry interest is mounting as FDA intensifies its study of food-product claims that unsaturated fats lower the blood cholesterol level. Some labels and ads imply further that low cholesterol means less heart disease.

In an attempt to find answers out of the maze of controversial views on this issue, FDA is consulting leading authorities in both medicine and nutrition. Existing reports on cholesterol and heart disease are being reviewed.

At this time FDA is not assured that a cause and effect relationship exists between high cholesterol and heart disease.

They do not know what, if any, value lowering blood cholesterol has — "by any procedure," they said. They do not know if unsaturated fats

(*Continued on page 14*)

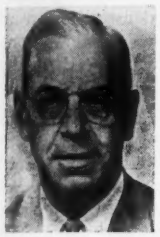
Association News

American Management Association

has conferred its highest award, a Distinguished Service Award, on C. Lee Rumberger, H. J. Heinz Company vice president for research

and quality control. Rumberger was honored for outstanding work during three successive terms as AMA Packaging Division vice president. He has also been elected an AMA director for a three-yr term.

Another Heinz executive, P. K. Shoemaker — Heinz vice president, manufacturing — has been elected vice president of AMA's Manufacturing Division.

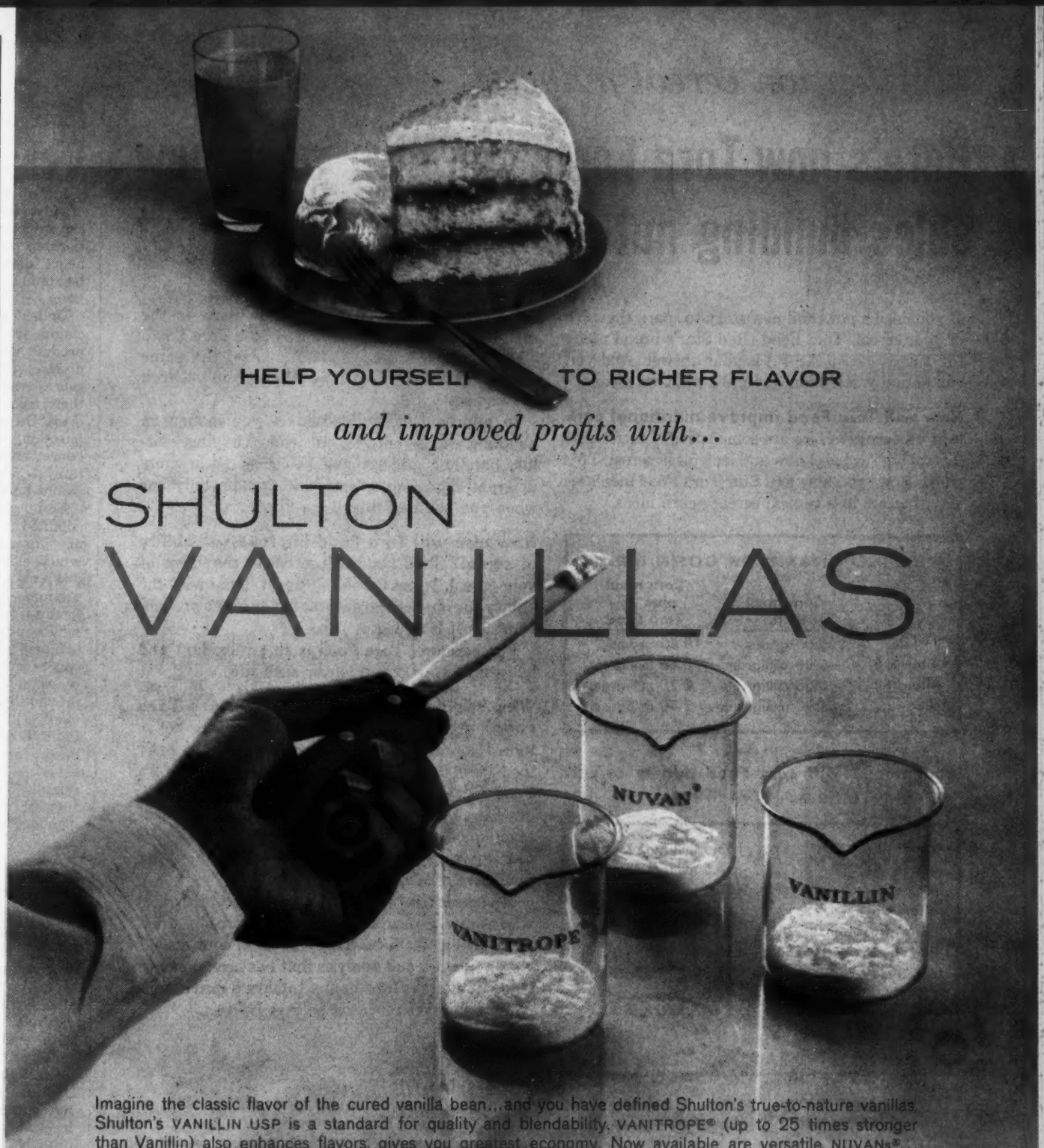


International Assn. of Milk & Food Sanitarians

has bestowed the annual Sanitarian's Award, which includes a check for $1000, to William Kempa, dairy and milk inspector for the city of Regina, Saskatchewan, Canada. John D. Faulkner, chief of the Milk and Food Program, US Public Health Service, was presented the annual Citation Award for outstanding services to the association.

(*More on page* 47)

For more information on product at right, circle 5646 see information request blank opposite last page.



Imagine the classic flavor of the cured vanilla bean...and you have defined Shulton's true-to-nature vanillas. Shulton's VANILLIN USP is a standard for quality and blendability. VANITROPE® (up to 25 times stronger than Vanillin) also enhances flavors, gives you greatest economy. Now available are versatile NUVANs®... blends of Vanillin and Vanitrope...so adaptable for quality vanilla effects, and even more economical than Vanillin. Whether it's chocolate—cookies—ice cream—cakes...you can make it better with Shulton vanillas. And save up to 50% or more in flavoring costs. Why not write for information and samples today?

SHULTON FINE CHEMICALS Division of Shulton, Inc. • 630 Fifth Ave., New York 20, N.Y. • Circle 5-6263

Making good products better – through research

Attention cereal makers:

Here's how Tora Food® can give you a new sales-building nutrition story at low cost

If you need a powerful new story to spark the sales of your cereal, Tora Food (Red Star's brand name for Torula Yeast U.S.P.) is your answer. And you can actually *save* money. Here's what we mean:

How will Tora Food improve nutritional content of cereal? Here are some specific nutritional factors housewives know and look for in cereal. This chart shows you how Red Star Tora Food increases these factors in a typical cereal—corn meal.

PER 100 GRAMS OF CORN MEAL

	Corn meal as is	Corn meal plus 3% Tora Food
Protein	9.00 grams	10.50 grams
Vitamin B_1	0.30 milligram	0.66 milligram
Vitamin B_2	0.08 milligram	0.20 milligram
Niacin	1.90 milligrams	2.80 milligrams

What totally will Tora Food add to cereal?
(At a level of 3# to 100#)

Vitamin B_1	163.5 milligrams worth
Vitamin B_2	54.5 milligrams worth
Niacin	408.6 milligrams worth
Vitamin B_6	40.8 milligrams worth
Para-amino benzoic Acid	20.4 milligrams worth
Pantothenic Acid	150.0 milligrams worth
Folic Acid	95.3 milligrams worth
Choline	4.8 grams worth
Inositol	5.4 grams worth
High quality Protein	1.5 lbs.

Here is a nutritional "barrage" that can't help but impress the nutrition-conscious housewife.

How can Tora Food actually save you money? The ingredients listed above would cost you 87.33¢ at current price levels, if you bought them individually. You get these *same* ingredients in the *same* amounts for only 54¢ in Red Star Tora Food. That's 33.33¢ saved. (Incidentally, the same amount of brewer's yeast would cost you between 72¢ and 84¢.)

In addition, Tora Food saves you money on handling and inventories. Instead of buying, storing, handling and keeping books on 10 or more different ingredients, you need handle only *one* when you use Red Star Tora Food.

How else will Tora Food improve saleability of cereal? Tora Food will intensify the flavor of your cereal. It has a mild, pleasant flavor with the ability to enhance the natural flavor of the product to which it is added.

Furthermore, Tora Food is an antioxidant and helps give your cereal longer shelf life.

Who besides cereal makers can use Tora Food? Almost any food processor. Here we've talked specifically about cereal makers, but baby food processors are already using Red Star Tora Food successfully. And here are some other types of processors who can use Tora Food to big advantage: spice, soup, chocolate, peanut butter, sauce and gravy, health food, smoked yeast and pharmaceuticals.

If you are a cereal maker (or *any* food processor) who wants a new sales-boosting nutrition story, write to us. We'll be happy to show and discuss with you work and analysis that has been done. Or if you prefer, we'll be happy to have a nutritionist call on you. Write to the address below.

Nutritional Division

RED STAR YEAST & PRODUCTS CO.

Milwaukee 1, Wisconsin

5647 on Reader Service Slip.

(*Continued from page 12*)

lower the blood cholesterol level — and if they do — just what the health significance would be.

An up-to-date presentation of just what the authorities are saying regarding the relationship of fats in foods to heart disease will be found beginning on page 24 of this issue.

Under the FD&C Law if claims are made that use of a product will prevent or cure a disease, this is a therapeutic representation. FDA must then treat the product as a drug. On this basis, FDA can question whether the "drug" bears adequate label directions — whether a prescription would be necessary, as well.

So far, FDA action has been confined to food supplements of unsaturated fatty acids which claim to ward off heart disease. Last November a product — "Saffocil Capsules" — unsaturated fatty acid from safflower oil was ordered condemned and destroyed by the court. The charges: "Falsely recommended by dealer for preventing and treating practically all heart diseases . . . Label falsely suggests that the need for unsaturated fatty acids in the diet has been established."

Other similar cases are pending.

Manufacturers ask FDA to withdraw proposed peanut butter standard

The time for filing comments on the proposed identity standard for peanut butter has expired. FDA is now faced with evaluating a thick volume of statements for and against its proposal.

Under FDA proposals, peanut butter would consist of at least 95 per cent ground peanuts. No more than 5 per cent

(*Continued on page 16*)

For more information on product at right, circle 5648 . . . see information request blank opposite last page.

For the Finest...

CORN SYRUP AND CORN STARCH

Penick & Ford

PENICK & FORD, LTD.
INCORPORATED

750 THIRD AVENUE, NEW YORK 17, N. Y.; 1531 MARIETTA BLVD., ATLANTA, GA.;
CEDAR RAPIDS, IOWA; 18 CALIFORNIA ST., SAN FRANCISCO 11, CALIF.

Photograph courtesy of The Family Circle, Inc.

 (*Continued from page* 14)

of the product would be provided by one or more optional ingredients, including salt, sugar, dextrose, honey, or hydrogenated or partially hydrogenated peanut oil.

According to the Peanut Butter Manufacturers Association, whose active members manufacture about 75 per cent of the peanut butter in the US, most manufacturers want no standard of identity.

They maintain that setting up a standard at the present time would freeze further improvement as well as development of nutritious spreads in which peanuts form only one of the major constituents.

They also argue that present label requirements listing all ingredients in the order of their predominance conveys information necessary for the consumers interested in peanut butter.

Procter & Gamble Co. filed formal comments asking that the standards be withdrawn. "There is no demonstrated need showing that a standard of identity is necessary to promote honest and fair dealing in the interest of consumers," they said.

On the other hand, one peanut butter manufacturer — the National Tea Company — came out as "heartily in favor" of the standard which will "keep quality on a high level."

Corn, cotton and soybean groups and a number of store chains registered opposition.

A few state governments, home economics organizations, housewives and doctors went on record as approving the FDA-proposed standard.

Consumers' Research, Inc. — along with a few of the housewives — took exception to the part of the standard referring to optional ingredients (hydrogenated or partially hydrogenated peanut oil.)

"It is our position," Consumers' Research said, "that in view of current researches indicating that hydrogenated fats may be a factor in the present high incidence of atherosclerosis and related diseases, that the presence of hydrogenated fats in a common foods should be discouraged.

"We are therefore opposed to permitting the addition of hydrogenated peanut oil in any amount in a standard for commercially made peanut butter."

Ten meat processors act on waste disposal as requested by HEW

Ten meat-processing plants and Sioux City, Iowa, ordered to stop pollution of the Missouri River last April have complied with the first step of a Health, Education, and Welfare Department notice.

HEW Secretary Arthur S. Flemming said he was "happy to announce . . . that Sioux City has complied satisfactorily . . . by contracting with an engineering firm to plan construction of a sewage treatment plant costing approximately $6 million. The industries involved are likewise in compliance."

The Sioux City notice was the first time the Secretary's authority had been used to direct specific pollution control action by a municipality. The action was based on the unanimous recommendation of an eight-member hearing board appointed under the enforcement provisions of the Water Pollution Control Act.

A notice similar to that involving Sioux City has been issued to St. Joseph, Missouri, and 18 meat-processing and other industrial establishments. Under this notice, the 18 plants are to advise the city on or before January 1, 1960, whether they want their wastes to be handled by the municipal system and if so to advise the city of the volume and character of the wastes to be treated.

Cured meat products may now be canned at 150 F — USDA

Under new USDA regulations, permission to can boneless cured pork products and luncheon meat without steam pressure cooking is extended to include products of 12 ounces or more.

"The decision to allow cured pork to be marketed in cans holding less than 3 pounds without pressure cooking was made only after several years of careful study had provided assurance of the safety . . .," the Meat Inspection Division said.

The pork and luncheon meats must be cured prior to packing and cooked in the can to an internal temperature of at least 150 degrees F. Then, they must be refrigerated.

Labels must be approved by Meat Inspection Division officials before use. Prominent on each principal display panel must appear the statement, "Perishable—Keep Under Refrigeration."

FDA STANDARDS

Aerated Dairy Products: Industry-proposed standards of identity for aerated "whipped cream" and "whipped table cream" have been published by FDA.

Under the proposals, "whipped cream" would have to contain at least 30 per cent of milk fat, by weight. This is the minimum requirement in the existing standard for "whipping cream." Not more than one-half of one per cent of the contents of a can would consist of one or more of the following emulsifying ingredients, added to aid the whipping process: extract of Irish moss, locust bean gum, karaya gum, algin (sodium alginate), gelatin, monoglycerides or diglycerides (or both) of fat-forming fatty acids except lauric acid.

"Whipped table cream" would have to contain at least 18 per cent by weight of milk fat and not more than six-tenths of one per cent of the emulsifying ingredients. The existing standard for "table cream" requires a minimum of 18 per cent milk fat.

Nitrous oxide or a mixture of nitrous oxide and carbon dioxide would be permitted or optional ingredients in both

products as whipping and propelling agents.

Under industry proposals, if sweeteners or flavors are used, the labels would indicate this.

Cheeses — Blue Cheese and Gorgonzola: Now in effect is the amendment proposed by the National Cheese Institute to permit the use of certain vegetable food fats as optional ingredients for coating the rinds.

Canned Peas: The identity standard is now amended to provide for use of the following seasonings as optional ingredients: dried green and red peppers, dried onions and dried garlic.

Peanut Butter: See news item on page 14.

Canned Tomatoes: Another proposal on standards has industry up in arms.

This one's an amendment to the food standard for canned tomatoes to permit the addition of citric acid proposed by the Canners League of California. An FDA-attached labeling proposal is what's causing the deluge of comments.

The Canners League proposal would allow use of citric acid to make up for any deficiency in the natural acid content of the tomatoes. The petition states that some lots of tomatoes received at canneries are deficient in acid and thus have to be cooked longer than other tomatoes to avoid possible spoilage. Undesirable overcooking may be avoided by addition of citric acid where necessary.

The amount of citric acid that would be allowed by the proposal would not exceed that required to compensate for the deficiency of natural acidity.

FDA has then proposed that if addition of citric acid should be permitted, consumers be informed of the addition by appropriate label statement.

This could complicate production operations immeasurably, industry says. One lot might require addition of citric acid, the next would not — double packing and labeling operations for the processor.

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

How Flow Characteristics of Salt Affect Storage and Feeding Designs

If you're planning to install new salt-storage and brine-making facilities or enlarge existing ones—or if you'd like to make your present setup more efficient—here's information that can help you.

Referring to the table, you will note that most sizes of Sterling Rock Salt commonly used to make brine have an angle of repose of 32° from the horizontal. But the angle of slide for salt on chute materials differs according to salt size and the material used. This angle ranges from 20° for smooth glass, plastic or highly polished steel to 54° for sawed wood or rough concrete.

These two principles of salt flow influence brine-making installations in three distinct ways: in storage-bin design, in computing the minimum slope for salt-feeding chutes, and in determining the proper clearance between chute opening and the salt dissolver.

1. Storage-bin design. It is sometimes thought that a salt-storage bin placed above a dissolver should incorporate a sloping hopper, so that salt will flow out freely through the opening in the bottom. This extra expense in bin construction, however, may not be necessary. The angle of repose guarantees that salt, as it pours through the discharge opening in a flat-bottomed bin, will form its own sloping bottom. What's more, the salt that doesn't flow out on its angle of repose will remain in dead storage for use in emergencies.

2. Slope of feed chutes. In some plants, local conditions make it impractical for an overhead storage bin to be exactly above the dissolver. No matter. Rock salt's varying angles of slide permit continuous salt flow in *sloping* chutes. Though a standard 45° slope is recommended because of its built-in insurance against clogged chutes, flatter slopes are possible with certain chute materials. See table.

3. Chute-to-dissolver clearance. The constant 32° angle of repose for the larger sizes makes it possible to determine just how much clearance there should be between chute opening and dissolver, to insure a full dissolver at all times. Your Sterling representative can supply data for different chute and dissolver diameters.

SIZES OF STERLING ROCK SALT	NO. 2	NO. 1	CC, A, C	FC
ANGLE OF REPOSE Salt on Salt	32° ± 2°	32° ± 2°	32° ± 2°	47° ± 6°
ANGLE OF SLIDE Glass; Smooth Plastic; Highly Polished Stainless Steel	20° ± 2°	21° ± 2°	21° ± 2°	30° ± 6°
Carbon Steel with Smooth Mill Scale; Medium-Polished Stainless Steel; Monel Metal	28° ± 2°	29° ± 2°	29° ± 2°	37° ± 3°
Carbon Steel (Heavily Rutted and Pitted); Smooth-Planed Wood; Smooth Concrete	29° ± 2°	31° ± 2°	33° ± 2°	44° ± 3°
Rough-Sawed Wood; Rough Concrete	38° ± 2°	41° ± 2°	41° ± 2°	54° ± 6°

Table gives Angle of Repose of salt on salt and Angle of Slide on various surfaces for several crystal sizes of Sterling Rock Salt.

Further data on rock salt characteristics is contained in a free booklet, "Brine for Today's Industry." This comprehensive booklet also has valuable technical information on many aspects of storing, handling or using salt. Send today for your free copy.

50 years of salt experience can benefit your company. From 50 years' field experience and a continuing research and development program (the first ever established in the salt industry), International has accumulated an unequaled amount of technical data on salt—its production, properties and uses. Our engineers will be glad to make this information available to you without charge. They can also help you select the right salt for your needs—from the complete line of premium-quality Sterling Rock and Evaporated Salt. Contact your nearest International Salt Company sales office, or write to us direct.

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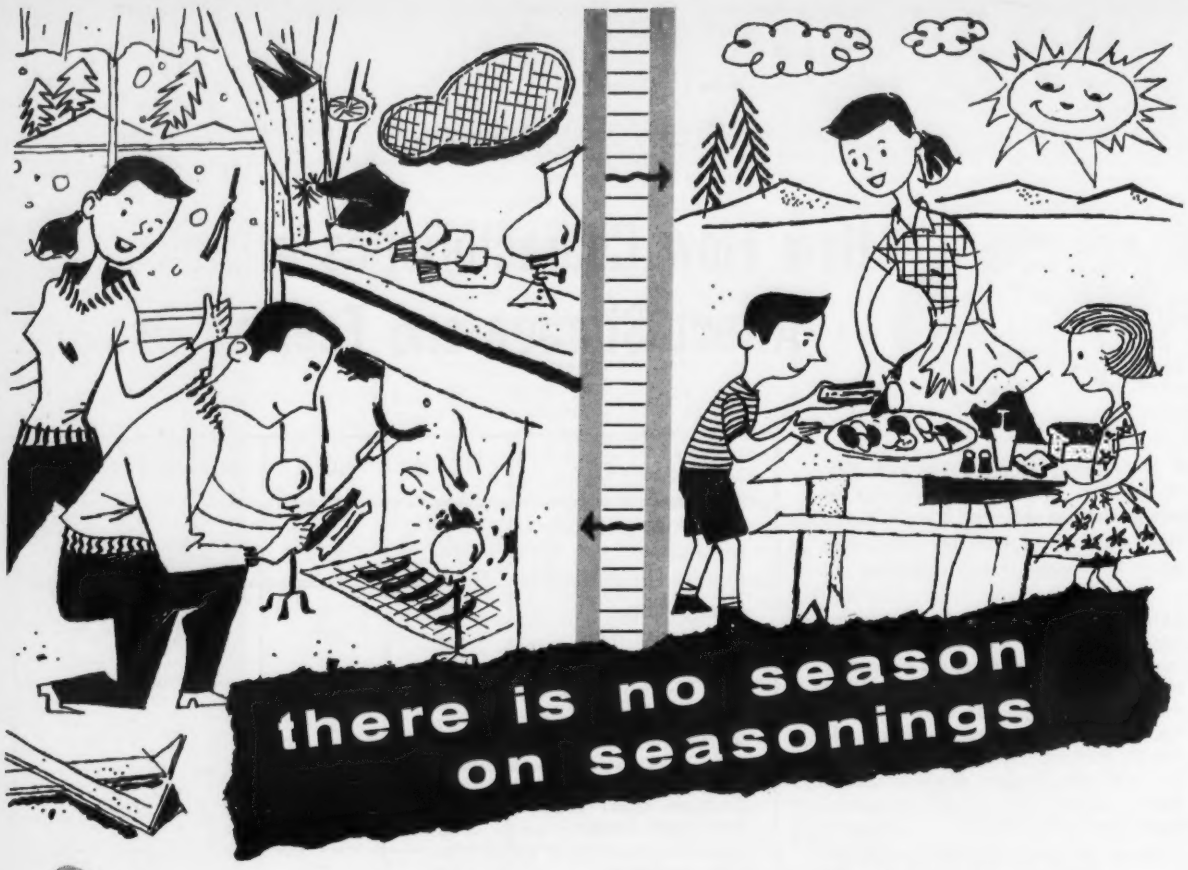

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F. A. Thies, President, The Terminal Elevator Grain Merchants Association . . .

blames politicians for costly farm program

Points out that commercial grain storage is merely a convenient scapegoat in the old buck-passing routine

The blame for this country's enormously costly farm program rests with those politicians of both parties who seek farm votes by continuing to back an unworkable program.

This is the charge made by F. A. Thies, President, The Terminal Elevator Grain Merchants Association, Kansas City, Mo.

Mr. Thies also places the blame on those politicians who go along with the program in exchange for farm-bloc support on other issues, and with the law itself, basically unchanged since the middle 30's, that encourages all-out production and makes surpluses inevitable.

In the familiar old buck-passing routine, however, the politicians are busily looking for a convenient scapegoat. And they've found that scapegoat in the commercial grain trades made up of independent and widely scattered companies with only a handful of votes.

Commercial storage costs

The present cost for storing and conditioning government stockpiles is now some $1.3 million daily. This is an enormous figure, but only because the surplus itself is enormous.

On a per-bushel basis, government approved storage rates range from only 32/1000ths- to 49/1000ths-of-a-cent a day, generally less than is paid by private renters of storage. And these rates provide fringe benefits far exceeding the basic storage function.

Included in these fringe benefits are:

— Complete responsibility for grain in store, with

payment guaranteed for losses in quantity, quality or grade, until danger of going out of condition makes removal and sale necessary.

— Assumption of financial risk in building new storage facilities which may be only partly filled, or entirely empty when local surplus needs are slight.

— Provision of costly equipment for cooling, turning, cleaning, aerating, fumigating and otherwise maintaining condition of grain.

— Keeping total government stocks freshened through merchandising older grain in the free market and replacing it with new crop supplies bought outright from farmers.

Charges are legitimate

These extras, in addition to the Herculean storage task itself, means rates paid warehousemen are neither subsidy nor gravy. They are legitimate charges for services rendered.

Mr. Thies calls attention to the fact that most grain companies are vigorous advocates of competitive free-market agriculture. Historically they are merchandisers of grain rather than public warehousemen, with storage activities limited mainly to their own accounts.

A harvest moving through their facilities to domestic and foreign buyers not only has more profit potential than the same crop in storage, but requires far less investment in buildings, equipment and labor.

Eliminate surpluses

The solution for the taxpayer lies in eliminating the surpluses themselves by returning agriculture to a free and competitive basis.

Realistically lower prices, prices which find their own level relative to costs of efficient production, would not only result in world-wide sales and consumption of each year's production, but might well encourage demand for ever-larger US harvests. END

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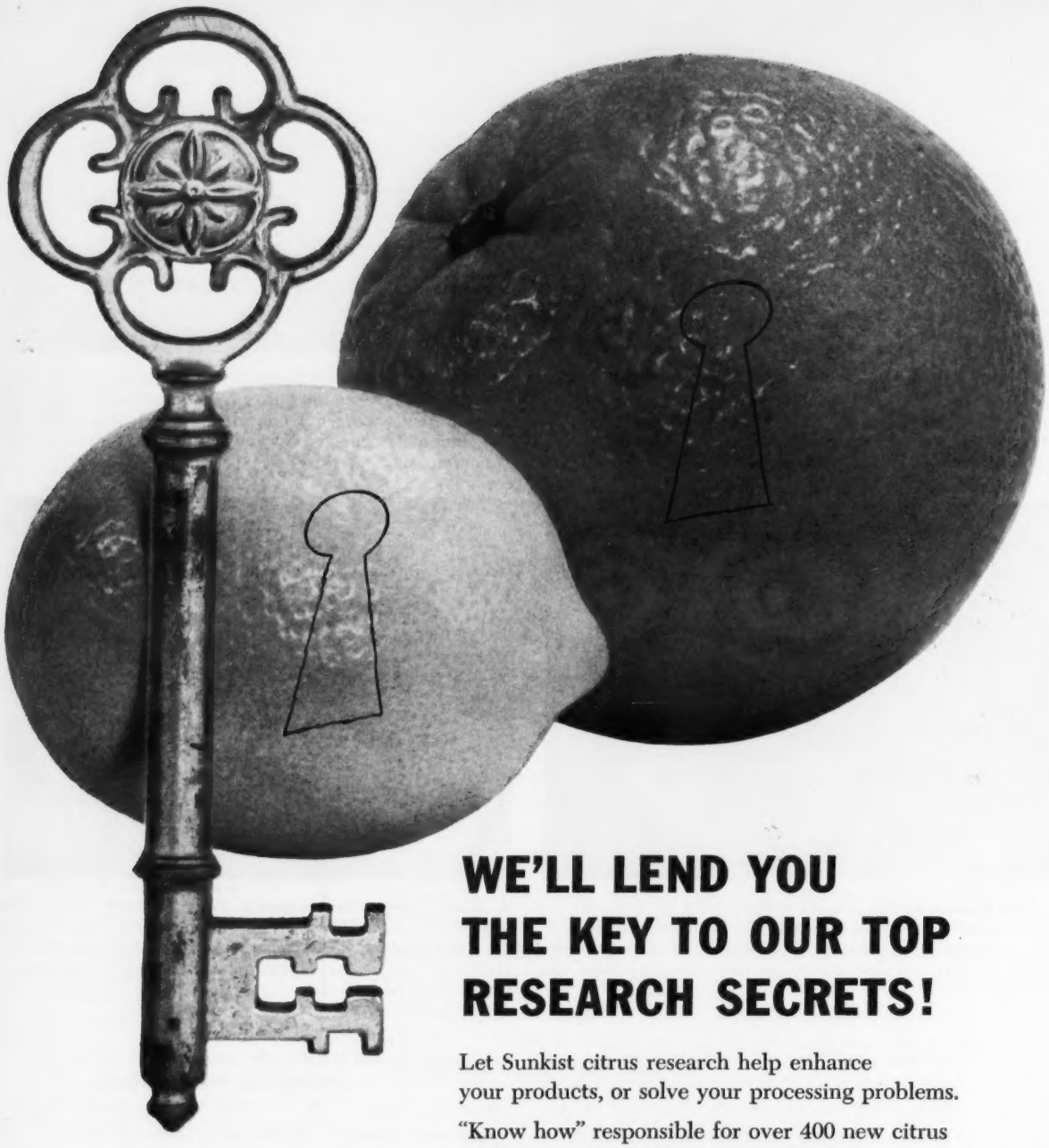

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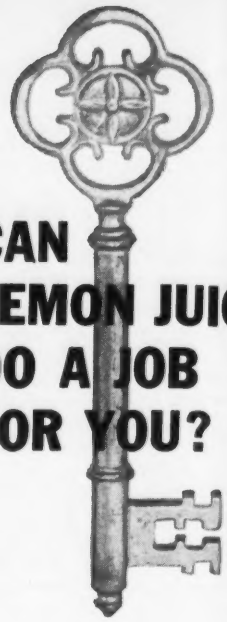

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A SPECIAL EDITORIAL

Recipe standards have served their purpose . . . it is now time to have more informative labeling and thus pave the way for

modernizing identity standards

HOWARD P. MILLEVILLE, Editor

Prepared in consultation with members of
FOOD PROCESSING's Editorial Advisory Board

THERE is some indication that important though perhaps only slight modifications in policy will be made in the near future by the FDA in an attempt to modernize its standards program.

There follow two articles in this issue which point up the need for re-evaluating this standards program in light of the tremendous changes which have occurred in the quarter of a century elapsing since the 1938 Food, Drug and Cosmetic Act was being formulated.

Suppose we re-examine just what consumer interests are in this matter, for their protection was the express purpose of the 1938 Law.

When a consumer purchases a specific food product he expects it to be of a generally recognized composition, or he expects to be able to ascertain the ingredients making up its composition by reading the label.

After consumers come to expect a certain composition in a food product, the Secretary of Health, Education and Welfare (through FDA) according to Sec. 401, 1938 FDC Act, should promote honesty and fair dealing in their interest by fixing and establishing a reasonable standard of identity.

When such a standard for a product is legally established, all brands of the product in interstate commerce must meet this legal standard of consumer expectancy.

Since composition of all brands of this product must now meet consumer expectations, no listing of the expected ingredients — those necessary to identity — is required.

In so far as optional ingredients are concerned, Sec. 401 states that **only** those optional ingredients need be listed on a standardized food which the Secretary of HEW deems are required for the purpose of promoting honesty and fair dealing.

On the other hand, foods for which no identity standard exists are required by Sec. 403 (i) to have the **common or usual** name of each ingredient on the label; except that spices, flavorings, and colorings other than those sold as such may be designated as spices, flavors, and coloring without naming each.

As written the law is clearly in the interests of the consumer; as enforced, consumer confusion is promoted.

Thus, FDA requires that many ingredients — especially food additives — be designated on the label by the name which is common or usual to chemists and uncommon—sometimes frightfully so —to the consumer.

In whose interest is it to require terminology that no one but a chemist understands? Certainly not the consumer!

Why does the FDA rationalize its position with unrealistic and ivory-tower legal technicalities when they are so clearly not in the interests of promoting honesty and fair dealing?

It is difficult to understand how the Secretary of HEW apparently sanctions the requirement that common-to-chemists and uncommon-to-consumer names be used for ingredients. On the one hand he strives to control food faddism; on the other, he makes wholesome foods bear labels that play directly into that cult of faddists who damn many processed foods as containing harmful chemicals.

Another point of confusion to consumers is their observation that listing of ingredients on food products varies in completeness from item to item.

It is perhaps too much to expect the consumer to know which foods have identity standards (with lesser label requirements) and which not. It might be helpful to them if the products that meet identity standards were marked by some sort of insignia or seal as suggested in the next article.

Specifically — peanut butter

In previous articles published in FOOD PROCESSING, under the general heading of "Unshackle Food Improvements", the argument was advanced that when separate legislation was established controlling the safety of food additives, the only ingredients which should be fixed in an identity standards for peanut those essential to (1) identity, and (2) economic integrity.

To these basic requirements we now add one more: (3) elimination of confusion in the mind of consumers.

This added requirement not only brings our argument in line with the basic points of the 1938 Act previously discussed in this article, but also brings it in line with the Supreme Court decision, Quaker Oats Farina Case, to which the FDA always falls back to support its recipe standards.

In particular, consider the identity standard for peanut butter, which has recently been proposed by the FDA. Suppose FDA rejects industry's argument (see page 14) that it is premature to set up

(*Continued, bottom, page* 117)

What Informed Consumers Expect from Food Standards

- **Want more standards fixing chief ingredients in prepared foods**
- **Desire listing of ingredients on labels of all foods**

Mary B. Wood

Extension Home Economist in Marketing
Department of Agricultural Economics
Cornell University, Ithaca, New York

To develop skill in label-reading is not an easy matter. Many homemakers are not familiar with the labeling laws that apply to foods over which the Food and Drug Administration has jurisdiction.

Time and again, homemakers have been surprised to learn about federal identity standards and that the foods for which mandatory standards exist are not required to have a list of ingredients on the label. They are confused by the fact that some foods have a complete list of ingredients on the label, some a partial list, and others have no list of ingredients.

They are surprised, too, to learn that the listing of foods is a clue to their relative predominance, and that this list can help them to select products their families will enjoy.

The names of many of the ingredients in prepared foods are unfamiliar to them. Since homemakers have little basis for knowing the functions of these ingredients, they are inclined to be leary of long, complicated terms.

Study of a list of products for which mandatory food standards exist leaves the consumer somewhat puzzled. Some classes of foods are highly standardized and others are not standardized at all.

Some standards have broad application — those for jellies and jams, and for sirups for canned fruits, for example. Other standards are quite limited in their application.

Most everyone eats generous amounts of some of the foods for which we have standards — including enriched bread, canned peaches, corn, tomatoes and fruit cocktail. But we also have standards for foods we use seldom and in small quantities — such as prickly pear jelly, or apricots with rum.

Consumers welcome the news that standards are in the offing for some of the relatively new products that they choose more and more often — products such as fruit beverages and ice cream.

They look forward to standards that will help to maintain the integrity of the prepared foods that come to market in increasing amounts — products such as mixes for fruit pies, breaded poultry, fish and shellfish. Those consumers who know food standards are more concerned with the minimum and maximum amounts of the chief ingredients than with a complete formula that dots every "i" and crosses every "t".

We who are in the business of consumer education and consumer information are making considerable effort to interpret food standards to the public. We don't find this an easy matter, although we have access to fine libraries and have splendid help from federal and state officials. There's more than one reason why the task is difficult:

1) As we delve into food standards we find both voluntary and mandatory ones — and we have to check with several agencies that have authority regarding mandatory food standards for identical products. The U.S. Department of Agriculture, the Food and Drug Administration, and the State Department of Agriculture and Markets may all have a voice in the standards of one product.

2) Information regarding state and federal standards is piecemeal and ferreting it out requires considerable detective work.

3) We find the language of food standards difficult to interpret accurately in everyday words.

4) We find that keeping up-to-date on changes in the status of food standards — voluntary, proposed, or mandatory — requires considerable patient attention.

Mass media specialists, however, find myriads of uses for clearly stated information on food standards and food labels. Their audiences are vast, their influence is tremendous.

We who are in the field of consumer information would welcome simple descriptions of food standards. This would free more of our time for other kinds of food information.

Because of the complexity of our food supply, the number of well-informed consumers will remain small until we have more readily available, easy-to-read information that describes food products accurately. I've asked some of my colleagues about their suggestions regarding identity standards and food labels.

From our conversations, several suggestions have come on which there is general agreement:

- A statement or a seal to the effect that a food meets federal standards of identity would be helpful. This might be a brief phrase "meets federal standards" or it might be an official seal to the effect that a product meets Food and Drug Administration standards. The seal of the American Standards Assosociation is a precedent along this line that is worth consideration.
- A list of ingredients in addition to the statement on federal standards would be informative. Even if you're well read on food standards, it's practically impossible to keep the details in mind. A message at the point of sale and at the point of use would be valuable. This list might say "from most to least" or "in order of amounts."
- Labels need to give information in simple language that is easy to read and to understand. We know that you are keenly interested in finding ways to simplify technical terminology, and we are strongly in favor of this effort. END

In this issue we present condensations of two papers which were presented at the Symposium on FDA Standards held by the Institute of Food Technologists last May. These condensations have been approved by the authors. The complete papers are published in the October issue of Food Technology.

Next month we will publish a summary of Dr. Peters paper, which was also presented at this symposium. We will also present views of other food industry leaders.

The Editors

Recipe Identity Standards Discourage University Research

Prevent consumers from realizing improvements which could be made in such standardized products as butter, non-fat dry milk, evaporated milk . .

Kenneth G. Weckel

KENNETH G. WECKEL
Professor of Food Technology and Head of the Department
University of Wisconsin
Madison, Wisconsin

SOME 20 years have elapsed since the procedure for the establishing of standards was created. Tremendous advances in technology of foods have been made in the interim.

The use of the Standard has not, apparently, induced the utilization to the fullest of such developments.

The term "recipe standard" is frequently used to describe certain portions of the Standards, or in cases, indicate the Standard is a recipe. The procedure for modification of the Standard prior to the Hale Amendment, was neither practical nor realistic.

There is widespread concern that with the Hale Amendment, it is still not expedient to modify a Standard.

In effect, the Standards as described are fixed or frozen to the knowledge extant when written.

It is proper to assume that products within the Standards list could be much improved by incorporation of new found knowledge. Obviously, this is not being done to the degree possible, and thus the potential benefits are not being passed on to consumers.

There is emphatically relatively little inducement to undertake study of recipe standards in the face of the demands, needs and criteria for selection of projects in the academic organization.

The historical experience of mechanics of Standards of Identity, and their modification has been one of frustration and delay. There is little incentive to be derived from this history that would lead, except where vital, to study at college level of standardized products because the data is most likely to be ignored and lie buried.

In the light of the "status quo" history of Standards of Identity, it is difficult to convince the college administrative director that research on product or components or methods that are substantially frozen or fixed is more fruitful than many other pressing problems or potentials.

This situation in effect diverts research to non-standard of identity items. It can be illustrated by example.

Butter, and nonfat dry milk, are defined by statutory definition. Butter was defined by Act of Congress in 1923, and included by reference in the 1938 Act.

Although modification of butter to produce a wholesome nutritional and less costly new product is technically feasible, apparently no change, or proposal for change in the Standard has been made in the interim. The place of butter in the diet, for want of possible modification, has declined considerably in the past 15 years.

The identity of skim milk powder was established by federal statute in 1941 (nonfat dry milk solids).

There are a number of possible modifications of this product through the use of additives. Nonfat dry milk is in need of nutritional balance, and this is becoming of great importance domestically.

In comparison, considerable research and improvement is being made in the formulary balance of instant type chocolate milk for which no statute law or Standard of Identity exists.

Both butter, and nonfat dry milk, must undergo statutory review. They seem to illustrate a "status quo" effect.

One of the earliest Standards of Identity developed within the 1938 Act was for evaporated milk. Although a number of experimental modifications of this product have been conceived, none has been proposed.

Only recently a permit enables aseptic fill of this product.

A canned milk product in which vegetable fats were substituted for butter fat was developed many years ago. It was excluded from interstate trade by the Filled Milk Act. It is, however, produced extensively statewise, and the prohibitive effect of the federal statute indirectly diminished.

Is this situation conducive to institutional research on the product evaporated milk for which there do exist technical problems?

Recent developments in sterile concentrated milks have many potentials of form and application. But their utilization may be effected by

(*Continued on page* 28)

THE CITY OF NEW YORK
DEPARTMENT OF HEALTH
September 25, 1959
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2701 -24th Avenue
Oakland 6, California
Howard P. Milleville, Editor
Food Processing
111 East Delaware Place
Chicago 11, Illinois
Dear Mr. Milleville:
Thank you for the opportunity to comment upon the material which will appear in Food Processing for October 1959.
My thoughts run about as follows:

CRISIS FOR FATS

Views of various authorities on the relationship of fats in the diet to heart disease are presented this month. In this way the reader can judge for himself the merits of the opposing viewpoints which were summarized in last month's article.

In that article, which commented on current advertising of vegetable oils it was stated that advertising normally the province of the FTC comes under the jurisdiction of the FDA when claims are made regarding treatment of a disease. Actually, advertising is always under the jurisdiction of the FTC—not the FDA.

However, when such claims are made in advertising, FDA may take the manufacturer to court on the basis of either the absence of specific directions for treatment of the disease on the label of the product involved, or for misbranding if directions are given on the label.

Howard P. Milleville
Editor

Grace A. Goldsmith, M.D.

Professor of Medicine, Tulane University

"Crisis for fat-containing foods becomes more firmly established" is a good presentation of current opinion without bias or prejudice. I am in complete agreement with the statement that "caution is in order."

In my opinion, we do not have sufficient information to recommend any major change in the American diet for the population as a whole.

For certain patients with coronary artery disease or a strong family history of atherosclerosis and its complications or patients with abnormalities of lipid metabolism, it may be advisable to change the pattern of fat intake. Since this type of nutritional therapy is still experimental, it is essential that it be carefully controlled and evaluated by the physician and research scientist.

Much more research is required to clarify the role of dietary fat in the changes that occur in blood vessels with the aging process.

The unwarranted claims which are being made by the vegetable oil industry in current advertising are certainly not in the public interest.

W. O. Lundberg, Ph.D.

Director, The Hormel Institute, University of Minnesota

I have no special comments about the article itself, except to say that it appears to summarize accurately the present views of various specialists on the relationship between fats and hypercholesteremia, atherosclerosis, and coronary heart disease.

I also think you render a service in pointing out the misleading advertising concerning unsaturated and saturated fats.

The three years that have elapsed since you published the first article on the crisis for fat-containing foods have not resolved the confusion concerning the role of fat in hypercholesteremia, atherosclerosis, and heart disease. So far as our own earlier statement (FOOD PROCESSING, March, 1957) is concerned, we have not seen anything that requires any important modification of the views

a reappraisal by the experts — part 1

expressed at that time.

However, much additional and valuable information has been obtained. In our own laboratory, we have gained additional data on the question of saturated and unsaturated fats.

There is, of course, rather general acceptance of the idea that dietary fats play a role in coronary disease. There also is fairly widespread agreement that saturated fats play a harmful role.

Opinions range widely, however, on whether unsaturated fats are actually beneficial, or whether they are simply less harmful or equally as harmful as saturated fats.

It is true that many different experiments have shown a lowering of blood cholesterol by feeding unsaturated fats, but as yet there is no conclusive evidence that this also reduces the probability of coronary disease. In fact, there are some findings which make it advisable to refrain from any claims at present on the merits of various types of fat. I can cite the results of one of our own experiments which bear on this point.

For three years we have fed groups of pigs on various types of diet, which included saturated as well as unsaturated fat. In the cases of pigs receiving high-calorie high-fat diets, there was a drop in blood cholesterol during the first 10 weeks among those animals receiving unsaturated fat, whereas in animals receiving saturated fat the blood cholesterol increased.

At the end of 22 weeks, however, the blood cholesterol of animals receiving unsaturated fat had risen quite dramatically, and had reached the same level as in the pigs receiving saturated fat. In the succeeding 2½ years, the blood cholesterol levels of the animals on the two types of fat have remained independent of the type of fat fed.

Moreover, among the few animals that have died, marked deposition of lipides has been found in the blood vessels, even in the cases of animals fed on unsaturated fat. In one such case, death apparently was due to a severe hemorrhage in the intestinal vascular system, which may have been brought on by a fatty degeneration of the vessels in this region.

To summarize: I think that the question of whether one type of dietary fat is better than another, in relation to coronary disease, is unresolved.

I also believe there is evidence that large intakes of fat of any kind increase the probability of coronary disease. There also is some evidence — as yet fragmentary — that other dietary factors can modify in a desirable direction the relationship between dietary fats and the incidence of coronary disease.

M. K. Horwitt, Ph.D.

Director, Biochemical Research Laboratory, Elgin State Hospital

Our investigations of the oxidation of the linoleic acid content of the diet and its subsequent deposition in practically all of the body tissues might be interpreted to have some practical significance.

It is true the physician now can use linoleic acid-containing fats as a tool with which he can lower the cholesterol level in the plasma of patients with hypercholesterolemia. However, there does not yet appear to be any justification for changing the national dietary pattern until more is known about the effects of adding large amounts of linoleic acid to the diet.

The ingestion of many deleterious chemicals will cause a lowering of plasma cholesterol; indeed, this is a general response to many stressors.

One point of importance that has been generally overlooked is that linoleic acid in the diet or in the tissues is easily peroxidized. To prevent this peroxidation, increased amounts of tocopherol — or some other antioxidant is required.

The effects of feeding increased amounts of linoleic acid in the absence of simultaneous increases in tocopherol have produced a number of pathological sequelae that are now being studied.

It would be no more justified to conclude from the incomplete evidence at hand that linoleic acid is bad for you than it has been for others to evaluate the incomplete evidence on the relationships of unsaturated fats to heart disease in a manner that would affect the dietary habits of a whole nation.

Norman Jolliffe, M.D.

Director, Bureau of Nutrition, NYC Department of Public Health

By and large your article is factual. There are, however, some statements that are not borne out by the facts. For example:

"While world-wide epidemiologic surveys do not provide evidence for sole association between dietary fat and heart disease, these studies do indicate that when the diet is low in animal fat, there is a low incidence of coronary artery disease".

This statement [a direct quote from the editorial by Dr. Stare and Dr. Lown — Editor's note] gives the wrong impression, for animal fat includes marine fats which are from animal sources.

These fats are of the poly-unsaturated variety so it is not a question of animal or vegetable, but the type of fat used.

That the blood cholesterol of middle-aged American males can be lowered on a diet that is practical, that can be followed and that is available in every community is indicated clearly in the attached reprint from the *American Journal of Clinical Nutrition*, July-Aug, 1959, p. 451-462 (The Anti-Coronary Club; Including a Discussion of the Effects of a Prudent Diet on the Serum Cholesterol Level of Middle-Aged Men).

In my opinion, this diet is not a drastic one.

Laurance W. Kinsell, M.D.

Director of Metabolic Research, Alameda County Medical Institutions

On the basis of all of the available evidence, one can say without any particular hesitation that for any given individual, if he can choose between a palatable dietary regimen which will give him a relatively low level of blood fat, including cholesterol, as compared to a palatable regimen which will give him a relatively high level of blood fat, including cholesterol, the former regimen will have a much greater likelihood of favorably affecting existing atherosclerosis or preventing the onset of atherosclerosis.

If the foregoing is in line with presently accepted facts and philosophy, it seems to us that the time is at hand to consider very seriously recommendations with regard to changes in the American dietary. (*Continued on page* 38)

Not content to wait for the man with "years of experience" Pillsbury pushes time

Training managers with si

By JAMES L. RANKIN*
Vice President
The Pillsbury Company

LATE in September a select group of 20 Pillsbury executives gathered at Lowell Inn outside Minneapolis to "sit in the president's chair" and make top management decisions that go with that chair.

At the end of five days, they had completed five years of business experience.

They had made the kind of key operational decisions facing food company executives every day. More important, they knew the consequences of their decisions within minutes after making them.

This telescoping of business experience and decision-making was possible through the application of mathematical simulation — the business strategy game — a relatively new training method to which Pillsbury had added its own twist.

For the past 18 months the company has conducted training seminars featuring its own business game, which, in essence, is an exercise in solving complex business problems and a tool for learning decision making.

Pillsbury's real need for a new approach to management training occurred in late 1957, when the company introduced two major organizational policies — divisionalization and decentralization. Through divisionalization the company was organized into three natural business areas within the larger corporate entity.

Decentralization meant locating the power of decision at a level where the most timely information exists and where action takes place. We recognized the need to communicate both the new corporate concepts as well as the means and techniques for better decision making.

Our plan was to develop initially those key managers who would most affect the successful implementation of these new corporate directions — specifically, those managers reporting at the corporate officer level and one or two levels below. This group includes the seasoned, mature executive performers, as well as a younger group of potential corporate leaders.

Simulation had its start during World War II. Both the Allied and Axis military leaders used it for training and planning. The Japanese navy, for instance, simulated the attack on Pearl Harbor almost five months before the attack date.

Several years ago, the American Management Association developed a business game which has received widespread attention. The AMA game gave impetus to Pillsbury's decision to develop a game which would more closely approximate the dynamic, competitive food industry.

We felt that the business game, interspersed with related talks by top corporate officers and outside guest speakers, would help fulfill our objectives.

We felt, and still feel, that the great values of simulation are in providing:

1. Concentrated decision making and immediate evaluation of the decisions made.
2. An increased awareness of relationships and balance between company functions.
3. Experimentation with alternative strategies that lead to business success.

Production man on team

To play the game, 20 Pillsbury executives are divided into five firms, each firm competing for a total market.

In establishing the organization of each four-man firm we include production, sales and finance-oriented managers. The fourth member usually represents a staff area. This composition gives each firm a broad scope of decision experience.

The four members of each firm are given a balance sheet, a profit and loss statement, and other essential operating information. Initial information given each firm is identical.

Members of each firm make a series of decisions concerning their operation for the next quarter or period. The decisions for all five firms are placed in a computer, which relates and translates each firm's decisions, according to the model, and issues new operating statements reflecting the position of each firm as of the beginning of the next quarter.

In this competitive exercise the relative position of each firm at any time is dependent upon the decisions of that firm relative to the decisions made by the other four firms. This sequence is repeated for 20 quarters, or five years of business life.

After all firms have made their quarterly decisions, the information is processed electronically to determine the outcome in competition.

After each quarter's business was conducted, data was

* Based on article appearing in October FOOD BUSINESS

James L. Rankin, a member of the board of directors and vice president in charge of Pillsbury's human relations (personnel, industrial relations, public relations), joined the company in 1934. True to story-book form, Rankin's first job with Pillsbury was running a Ditto machine in the stock department at Minneapolis headquarters. Elevated to corporate v.p. in 1953, Rankin reached his present position in 1957.

ith simulated business game

Now available for use by other companies

telephoned direct to the Corporation for Economic and Industrial Research, the nation's leading consulting computer service, fed into their computers, and the results relayed back by long-distance phone within the hour.

The decisions made by each firm each quarter involve:

- Production (unit cost, units, total cost).
- Research and Development Expenditures.
- Marketing Expenditures.
- Plant Capacity (units) — plus or minus.
- Price.
- Market Research (competitor's share of market, total industry marketing).
- Expenditure (relative quality of product).
- Bank Loans — plus or minus.
- Dividends.

There is also built into the game a random chance factor.

The consequences of each firm's decisions are determined by the underlying economic relationships built into the model. The decisions, when integrated with economic relationships, determine total size of the market, each firm's share of market, and operating costs.

Here is a description of those relationships:

Product Unit Costs. Unit costs depend on capacity, level of output, output variations between quarters, and expenditures on research and development during the preceding four quarters.

Total Market. Size of the total market (potential unit sales for the industry as a whole) depends upon long-term growth trend, the phase of the business cycle, total industry expenditures on research and marketing in the current and three preceding quarters, and on the average per unit price charged by the industry.

Share of Market. The share of market for the firm depends upon the amount spent by that firm on research and development in the current and three preceding quarters relative to the amounts spent by other firms, the amount spent by the firm in the current quarter on marketing relative to amounts spent by other firms, the price charged in the current quarter by the firm relative to prices charged by other firms, and the ability of the firm to supply its potential customers.

As an additional measure of corporate effectiveness, each firm is given 100,000 shares of stock. The price of this stock depends upon the firm's profits in the four preceding quarters, the dividends paid in the four preceding quarters, the total net assets of the firm, the value of inventories held by the firm, the capacity of the firm, and the phase of the business cycle.

To add realism to the exercise, each firm is permitted to borrow money based upon a line of credit. The line of credit consists of two "parts": one based on the firm's inventories or past profits (whichever is more favorable) and the other based on the market quotation of the stock.

Three weeks prior to a seminar each participant is given advance study materials. These include an explanation of simulation and a complete explanation of the decision exercise relationships, including a sample copy of the original operating data.

Following this the participants are told that they have been assigned by our "board of directors" to operate one of five newly acquired firms for a five-year period. At the end of that time they will be required to prepare and present a detailed report of their operations to the "board of directors," which is composed of the other seminar participants. Based upon their reports, the "board" will decide the future of each firm and its management.

Creating this "board of directors" environment has several advantages.

It provides a logical climate for a critique by members of each firm; it creates greater personal involvement by increasing competitive challenge; it prevents "end-game" strategies; it places the entire exercise in a realistic business climate.

No particular organization structure is assigned or suggested for the firms. We believe that an important part of the learning experience is recognition of the significance of appropriate organization structures for effective decision making.

The future of decision simulation for management development appears unlimited. It has demonstrated its value in top management development. For broadening future top and middle management we judge it has proven its worth. END

Available from IBM

Basic model of the Pillsbury game was developed by Professor L. Hurwicz, University of Minnesota, J. Quirk, University of Purdue, and the following Pillsbury personnel: J. Bradley and O. Schenk of the experimental design mathematical research department, J. Zimmerman, personnel training manager, and Dr. S. Levy, manager of manpower development and personnel research.

It is now available for use by other companies through IBM, 590 Madison Ave., New York 22, N.Y.

Staley's Food Production Tips

in taste, body, color, sheen, profits...

Sweetose **makes the difference! Here's why!**

In tomato catsup, Sweetose protects against browning. Holds rich, red color. Improves gloss and sheen. Enhances flavor. Extends shelf life.

In pork and beans, Sweetose insures precise control of browning and sweetness—with tangier, more appetizing flavor—improved color and sheen.

Whatever you process—whether sweet pickles, pork and beans or tomato catsup—bland, crystal-clear Sweetose Corn Syrup will improve the quality of your products.

Where sweetness is important, the unique characteristics of versatile, enzyme-converted Sweetose assure *balanced sweetness*, giving sweet pickles a firmer, crisper body—mellower flavor and brighter sheen, with faster finishing, less softening. Where color and sheen are important, Sweetose holds rich, natural color—gives an appetizing gloss and sheen that wins sales. And taste? Sweetose delivers a tangier, zestier flavor without masking even the most delicate spices.

These are but a few of the many advantages of Sweetose. For complete information on how Sweetose gives your products the characteristics your customers want most—and at *definite sweetener savings* for you, contact your Staley Representative at the branch office nearest you, or write today.

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THE ORIGINAL ENZYME-CONVERTED CORN SYRUP

5653 on Reader Service Slip.

Recipe standards discourage

(*Continued from page 23*)

the limitations of the Standards.

Although a long list of common foods were included fairly early by Standards of Identity, such as bread, flour, evaporated milk, canned foods, it took some 16 years before an initial proposal was published for ice cream.

Hearings were first begun in 1942; some 9 years of postponements and delays resulted in the proposed definitions being published in March 1958.

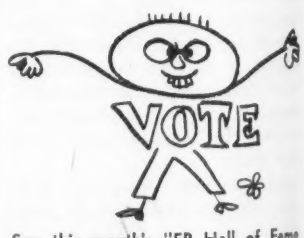
The hearings involved a total of some two years over a five year period. What is the fruit of potential research in this procedure?

What is the subsequent attraction to further research once the Standards are promulgated?

There is a tremendous need for re-evaluation of existing standards to correct for changes and developments that have occurred in the interim.

In the agronomic field alone there has been introduced intensification of acreage, irrigation, new harvest machinery, new process equipment, and certainly new varieties of crop. Yet there seems to have been no examination of these developments to relate their effect to specific standards specifications such as alcohol insoluble solids of peas, fibrosity of beans, or the methodology of such tests.

Perhaps what is needed in the Standards of Identity program is a mandatory provision for periodic reappraisal of the Standards, and of the facts by which the original Standards were brought into being. END



See this month's "FP Hall of Fame Cartoon" on page 114, and then vote for your favorite on the Reader Service Slip.

Dramatic changes in USDA research program aid scientific progress in food processing as . . .

USDA Food Research Develops

New products
New processes

DR. GEORGE W. IRVING, JR.

Dr. George W. Irving, Jr.
Deputy Administrator
Agricultural Research Service, USDA

The past 10 years have brought dramatic changes in the USDA program of research and development on the utilization of farm products which have particular interest for food processors.

First, the program has been considerably enlarged. The $8 million allotted to utilization research on food and feed this year is almost double the amount spent in 1949. (A little more than $8 million is allocated this year for research on industrial (non-food) uses of farm products.)

Second, the administration of the program of all research in USDA has been strengthened through the establishment of a more tightly-knit organization — the Agricultural Research Service. Within ARS is one unit for utilization research and development.

Some 500 scientists and engineers are engaged in utilization research on food and feed. Most of them work in the four regional laboratories that were built during 1939-41 (see principal locations on organization chart).

These laboratories also serve as headquarters for the Utilization Research and Development Divisions. Studies of interest to food processors are carried on in each Division.

Studies of the Eastern Division, Wyndmoor, Pa., are based on livestock and dairy products, fruits and vegetables of the East, and honey and maple products.

Those of the Northern Division, Peoria, Ill., are based on corn, wheat, soybeans, and new crops of potential interest as food.

Those of the Southern Division, New Orleans, La., have citrus, sweet potatoes, peanuts, sugar cane, cottonseed, rice and other fruits and vegetables of the region as their base.

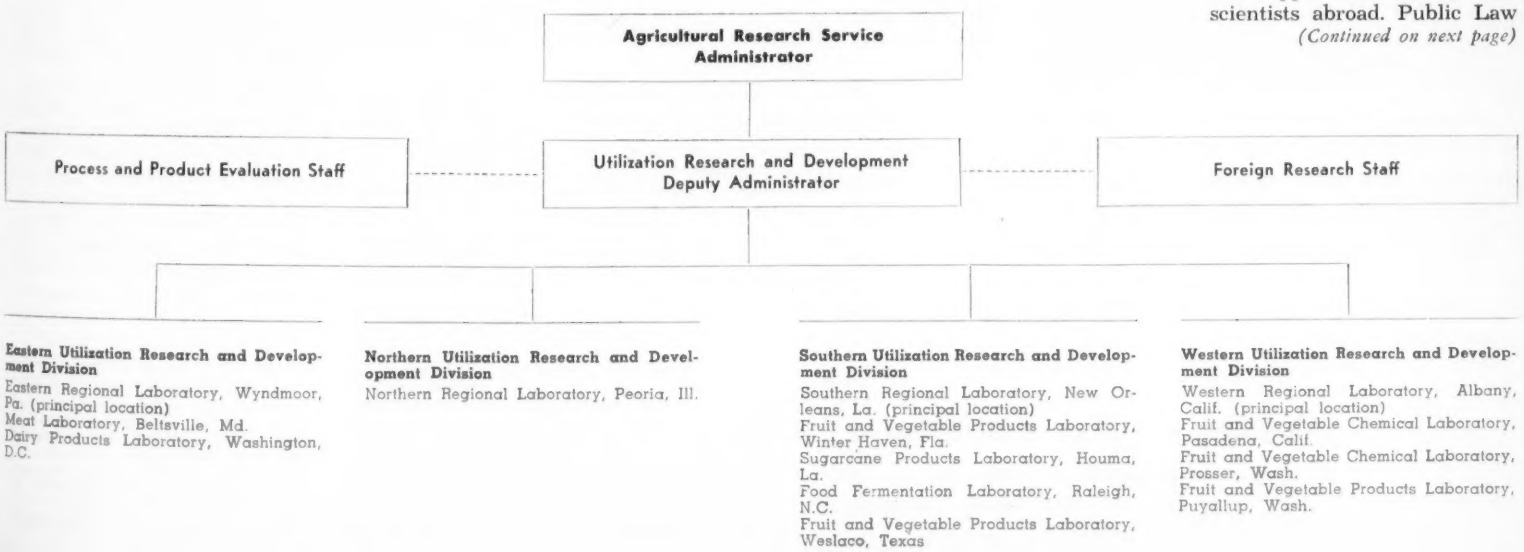
Those of the Western Division, Albany, Calif., are based on wheat, rice, poultry, eggs, sugar beets, forage crops, and Western fruits and vegetables.

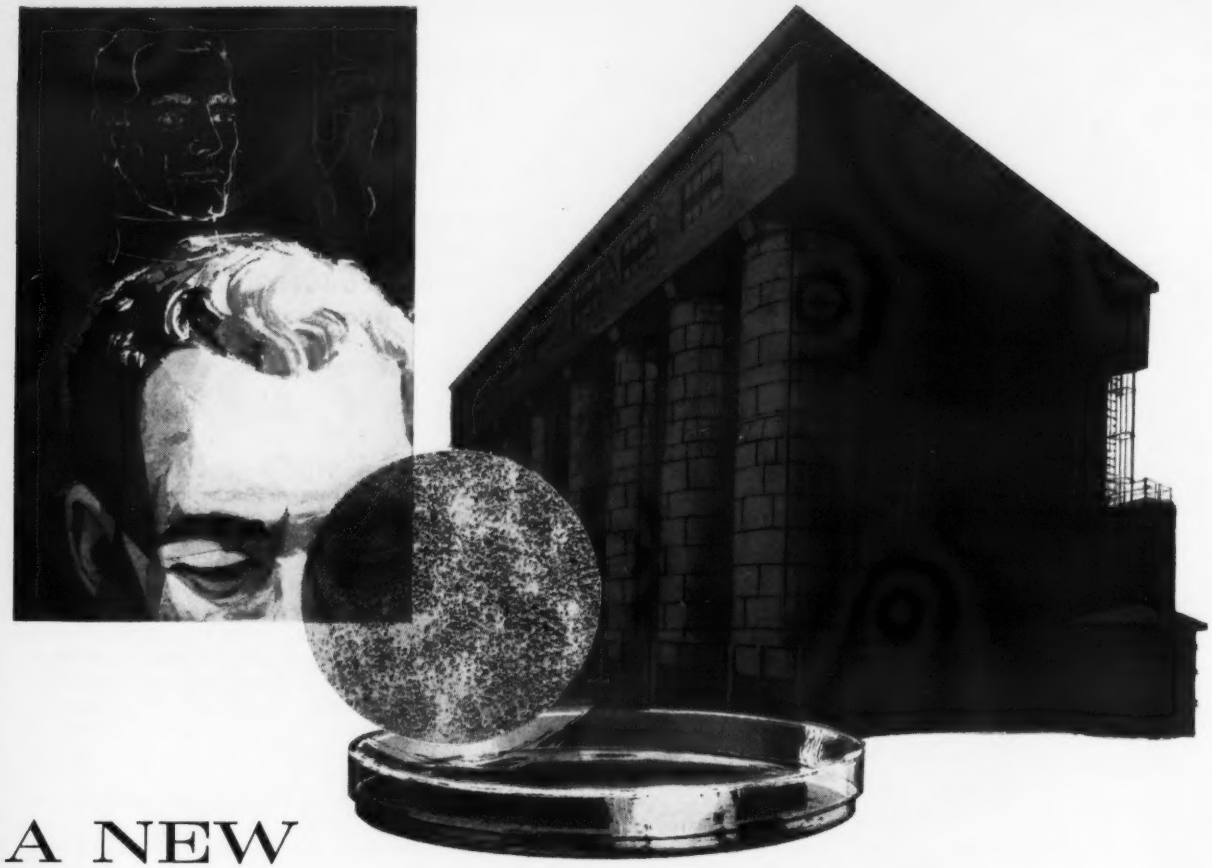
A third change in utilization research is the emphasis given to fundamental studies through the establishment of pioneering research laboratories (FOOD PROCESSING, March, 1959.)

Here, highly competent scientists are seeking to learn more about the substances that determine flavor, color, texture, and nutritive qualities in food and to find how these substances are combined in plant and animal products and how they change during processing and storage.

Fourth, USDA has surveyed scientific institutions around the world to set up and support research by able scientists abroad. Public Law

(Continued on next page)


Agricultural Research Service
Administrator
Process and Product Evaluation Staff
Utilization Research and Development
Deputy Administrator
Foreign Research Staff
Eastern Utilization Research and Development Division
Eastern Regional Laboratory, Wyndmoor, Pa. (principal location)
Meat Laboratory, Beltsville, Md.
Dairy Products Laboratory, Washington, D.C.
Northern Utilization Research and Development Division
Northern Regional Laboratory, Peoria, Ill.
Southern Utilization Research and Development Division
Southern Regional Laboratory, New Orleans, La. (principal location)
Fruit and Vegetable Products Laboratory, Winter Haven, Fla.
Sugarcane Products Laboratory, Houma, La.
Food Fermentation Laboratory, Raleigh, N.C.
Fruit and Vegetable Products Laboratory, Weslaco, Texas
Western Utilization Research and Development Division
Western Regional Laboratory, Albany, Calif. (principal location)
Fruit and Vegetable Chemical Laboratory, Pasadena, Calif.
Fruit and Vegetable Chemical Laboratory, Prosser, Wash.
Fruit and Vegetable Products Laboratory, Puyallup, Wash.



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Miles Chemical Company
division of Miles Laboratories, Inc.
Elkhart, Indiana

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USDA food research

(*Continued from preceding page*)

480 makes it possible for USDA to pay for research abroad with foreign currencies from the sale of surplus farm commodities.

Work now in progress is broadening the base of fundamental research. It may also provide clues to solving problems that come when US farmers try to sell on markets that are unfamiliar to them.

Fifth, USDA utilization research reflects an increasing awareness of the problems in food processing on the part of administrators who plan the programs and scientists who do the research.*

An important part of their information comes from food processors who serve on the advisory committees set up under the Research and Marketing Act of 1946.

These 26 committees — composed of farmers, scientists, college administrators, and representatives of the farm-based industries — meet each year to review research in progress. They have the added responsibility of proposing new research and giving priority in their recommendations to the studies they consider most urgently needed.

Other information comes from the frequent and informal exchange of ideas that characterizes science and technology. The people in the food processing industry who are most familiar with USDA utilization research and development are the food technologists.

Their professional groups have recognized the achievements in this research with a number of awards, the most recent one being the award of The Institute of Food Technologists to the USDA group that developed the flake process for dehydrated mashed-potatoes (FOOD PROCESSING, July, 1959).

* Editor's note: There is also a growing interest in utilization studies on the part of state leaders who plan and administer research in the state experiment stations. During the past three years marked expansion has taken place. Today almost $5 million is being invested each year in utilization research programs at the experiment stations. Most of the work is in basic studies of the chemical and physical characters that affect quality.

USDA Food Research: Treasure Chest of Product, Processing Ideas

HOWARD P. MILLEVILLE, Editor

A growing fund of new ideas for the food industry is in prospect as the US Department of Agriculture expands utilization research and development.

The wide scope of USDA utilization research and development may come as a surprise to those who know it chiefly through cooperative research for a single industry.

Its range is indicated by the following selected examples of products and processes that have recently come into commercial use or soon will be available for commercial introduction, and some projects, now in progress, that have important commercial implications.

Information about these new developments and other research of interest to food processors can be obtained by writing Dr. George W. Irving, Jr., Deputy Administrator, Utilization Research and Development, Agricultural Research Service, USDA, Washington 25, D. C.

For fruits and vegetables

1. Dehydrofreezing techniques that reduce bulk and weight of the processed product to about half of that of ordinary frozen foods and give substantial savings — from 2 to 5 cents a pound — for refrigeration, shipping, and storage.

Dehydrofrozen foods have other advantages. They retain the original texture, flavor and vitamin content of the fresh produce. They have an exceptionally fast rate of water absorption. Individual portions can be removed from the container without thawing the entire pack. The dehydrofrozen products have a uniform moisture content and do not drip when thawed.

2. A belt-trough dehydrator that provides fast, uniform drying for fruits and vegetables. Processors now using the driers report drying is much more rapid than by dehydrators formerly used. The dried products have excellent natural color and flavor. The process is particularly well suited for apples, carrots, potatoes, bell peppers, pimentos, and shelled walnuts.

3. Drying fruit and vegetable concentrates to obtain a porous solid structure by the puff method and more recently by the foaming method. A high quality product is obtained that can be compressed to a dense powder which reconstitutes easily in cold water.

4. A process for recovering in essence form the volatile aroma and flavor of fresh fruit juices. The essence contains the volatiles in a clear water-white liquid concentrate 150 times or more the strength of the fresh juice. The process has been used to enhance flavor in processing of apple, grape, peach, cherry, strawberry, red raspberry, blackberry, and blueberry juices. It has also been used

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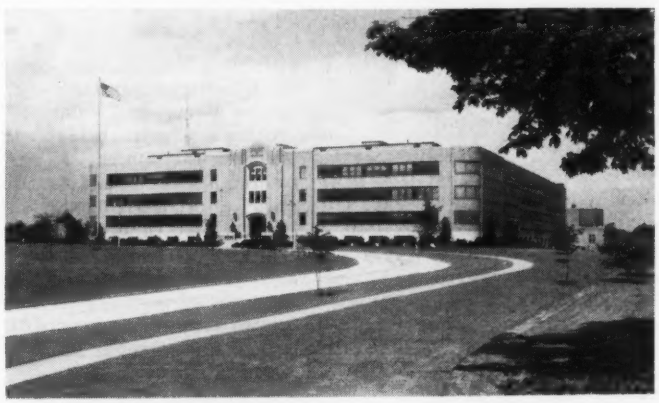

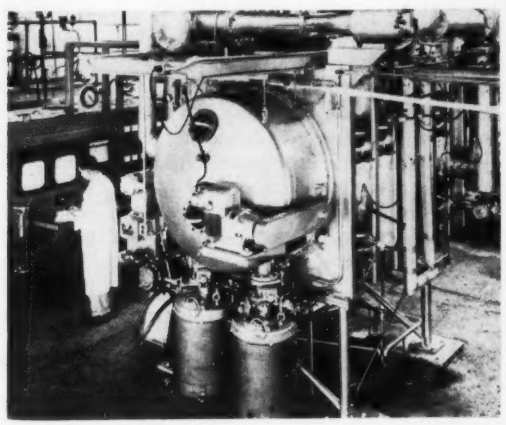

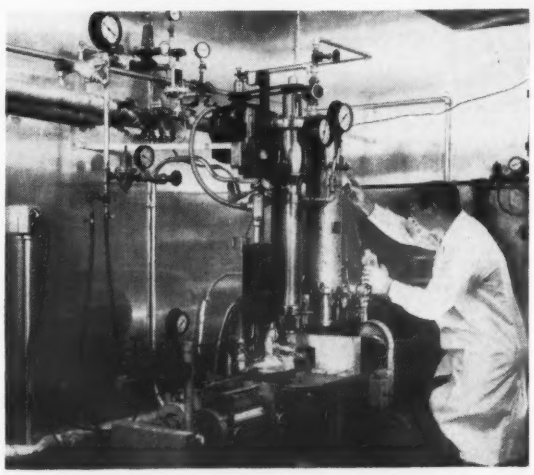

Headquarters for each of the Regional Utilization Research Divisions are the four Regional Laboratories, one of which is shown above. Other photos show views of food concentration studies in progress at one of these Laboratories

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The steel in a Wissco Belt withstands the rigors of flash freezing, the heat of cooking or baking, the corrosives of washing or draining—*without stretch, distortion or breakup.* Wissco Belts are supplied in stainless steel—to help meet sanitation regulations—as well as galvanized, carbon or alloy steels for specific applications.

Every Wissco Belt is *washed before shipment* so it can be put into operation as soon as it is installed. And your Wissco Belt will be *shipped on a reel,* ready for quick, easy installation. Reels cost much less to ship and store than the usual multiple crates.

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USDA research – Treasure chest

(*Continued from preceding page*)

to save volatile flavors usually lost in the making of preserves, jams, and jellies. The volatile concentrate is being used in the manufacture of ice cream, sirups, flavoring extracts, and candies.

5. Process for making dehydrated mashed potatoes, now widely manufactured as granules or as flakes. The know-how gained in developing these products is now being applied to the development of dehydrated sweet potatoes.

6. Comprehensive, detailed information on the effects of fluctuating temperatures in storage, handling and shipping and marketing channels on the quality of frozen foods. This information is now being used by processors, distributors and consumers as guidelines in maintaining the original high quality of frozen foods from the processing plant to the dinner table.

7. An inhibitor to prevent softening of cucumbers during brining.

8. Techniques for rapid heating of juices and other fluid foods to minimize damage to flavor and color. This process, which brings the product to 250-300 F in a fraction of a second, is suitable for pasteurizing or sterilizing milk and juices, in stripping volatile flavoring agents from fruit juices, in inactivating enzymes in liquid foods, and in concentrating fruit and vegetable juices.

For grain products

1. A method that holds special interest for the baking industry in that it permits the use of conventional drum-drying equipment for producing dried, undenatured gluten.

2. Techniques for making quick-cooking, tasty, nutritive bulgar and pilaf — products originating in the Near East centuries ago — that offer new market possibilities for wheat and rice.

3. A continuous batter process for wet-milling wheat flour to produce high quality starch and gluten from wheat flours. The products find special uses in foods and industry.

4. Techniques for freezing breads, cakes, pies and other bakery products to maintain high quality over long periods.

5. The isolation and identification of more than 30 compounds that contribute to the flavor and aroma of just-baked bread. This is a fundamental approach to developing techniques for obtaining and holding the desired fresh flavor and aroma in bread.

6. New procedures for drying rough rice that reduce costs, boost plant capacities, and increase yields of unbroken grain.

For livestock products

1. Improved quality control in the manufacture of sausage, is based on research to establish the precise relationships of fat, water, protein, and phosphate. Back of the determinations are new techniques for fractionating meat proteins and studying individual enzymes for further advances in meat processing.

2. A process for making sugar-preserved dairy cream, especially suitable for use by ice-cream manufacturers. The cream maintains excellent quality during storage at room temperature for as long as six months.

3. A method for controlling bacteriophage and thereby promoting normal growth of starter cultures in cheese.

4. A new technique in the process of making Cheddar cheese that reduces hand labor to about half of that required by methods now in use.

5. A process for making yolk and whole-egg powders of near-instant dispersibility. Now under evaluation, the process stems from continuing studies of the basic chemistry and composition of eggs.

6. A foam-drying continuous process is under development for producing dry whole milk crystals that reconstitute readily in water and give a milk comparable in flavor and food value to that fresh from the dairy.

7. A simple, low-cost, low-temperature process for rendering lard that gives a good yield of a relatively bland product.

8. New techniques for feather removal, chilling, freezing and handling of poultry meat to assure optimum tenderness in frozen products.

9. Better methods for maintaining flavor in precooked poultry through freezing, cooking, and overcoming oxidative changes.

For food fats and oils

1. Improved ways — including new hydrogenation techniques — to stabilize soybean oil so that it is more suitable for cooking in liquid form.

2. A filtration-extraction process especially suited to medium-to-small vegetable oil refining mills. Installation and power costs are low and it permits a mill to process different kinds of oilseeds the year-round as they are available.

3. Improved techniques for using domestic oils in confectionery fats. These include a process for making cocoa butter-like fats from domestic oils and an instrument for measuring hardness in confectionery fats.

4. Improved hydrogenation techniques that make possible closer control and achieve desired modification of vegetable oils.

5. A process of deodorizing and stabilizing beef fat that has substantially broadened the use of these materials in high quality shortenings.

For sugar and sirup products

1. An ion-exchange process for obtaining high yields of direct consumption sugar from can juice.

2. Improved handling and processing operations which reduce costs of producing beet sugar.

3. A simple, inexpensive, adaptable process that intensifies the flavor of maple sirup, making it more widely useful and acceptable. END

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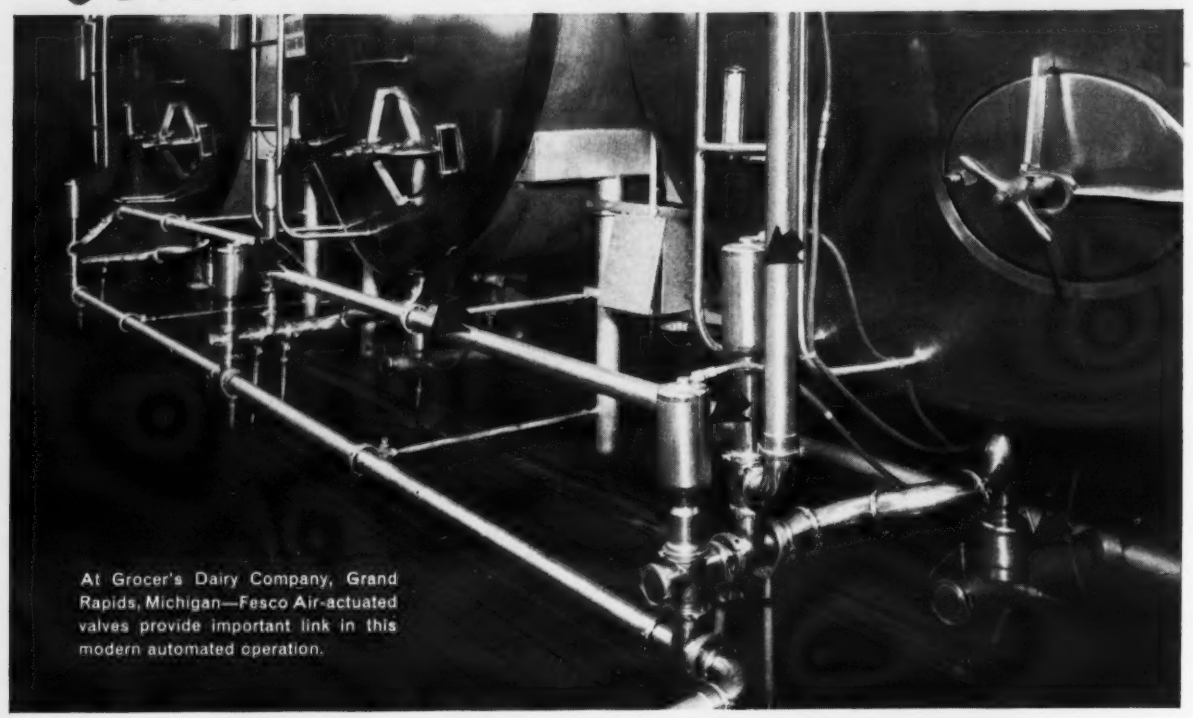

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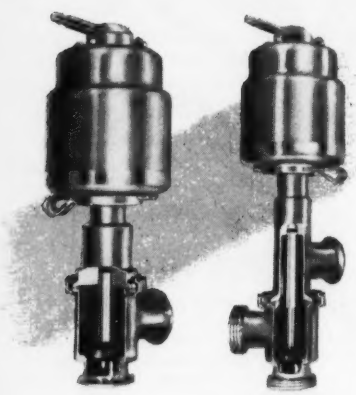

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Now available to public! Digest of Army Quartermaster findings during four pioneer years of research into

Radiation preservation of foods

All information accumulated by the Army Quartermaster Corps during its first four years of pioneer research (1953-57) into use of ionizing radiation for preservation of foods now is available to the public in a single 475-page volume.

Originally published in August 1957, and made available at that time to governmental agencies and cooperating institutions, research organizations and industrial companies, the book contains some important findings drawn from unpublished government reports, files and technical papers.

Other data already have appeared in the technical journals, but are here compiled under one cover and made more meaningful by placement in sections that carry related findings.

After considering the worldwide implications of radiation preservation, and surveying the historical background that led up to the Quartermaster project, the comprehensive volume devotes nearly 400 pages to, respectively, the physical, chemical, biological and technological aspects of radiation preservation.

Each of the 28 chapters in the four technical sections is authored by one or several researchers expert in the special area covered.

A final section considers problems and ventures predictions for future development and commercialization of the art.

(Monograph PB 151493, "Radiation Preservation of Food," 475 pages, originally published in August 1957, may be ordered from U.S. Department of Commerce, Office of Technical Services, Washington 25, D.C. Cost is $5 per copy.)

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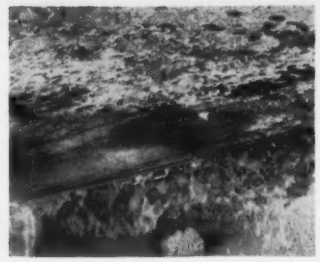

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Russell-Miller Milling Company

New in-transit ventilation system assures that bulk flour will arrive at bakery as fresh as when loaded into bulk truck or Airslide car at the mill

A NEW filtered air ventilator which can be applied to Airslide railcars, bulk flour trailers or barges represents the first real breakthrough among many attempts to solve the persistent "caking" and mold formation problems that occur during transport of bulk flour.

Source of the trouble is the wide temperature variation between product and "container" that exists to some degree from time of loading and throughout duration of shipment.

Bulk flour usually is loaded at a flour temperature of 75-80 F, while the Airslide car may be any temperature from 100 F to minus 30 F. The flour as loaded normally contains 14 per cent moisture.

If the temperature variations and humidity are such as to drop below the dewpoint, the cold car surfaces act as a "dehumidifier," and the warm, moist air released from the flour is drawn to the car surface. Condensation results.

An added complication is the considerable turbulence created during loading. Flour dust which settles on the car surfaces mixes with the condensate, causing an accumulation or caking on walls and roof of the car.

This accumulation adhering to the epoxy resin liner becomes discolored, develops a musty odor and is very difficult to remove. The scraping required to clean it off usually damages the car liner, and the car soon requires expensive relining.

In-transit settling

When the car is loaded and the hatches sealed, all of the hot, moist air being released from the flour is retained in the area above the flour load.

In transit the load settles approximately 18-20 in. In this settling process, hot, moist air released from the flour becomes more concentrated in the top of the car.

During the daytime, when the car is heated from the sun, solar heat draws additional moisture out of the flour into the space above the load level. At night, when the car surface cools, the hot,

(*Continued on next page*)

moist entrapped air further condenses on walls and roof above the load level.

The resultant caked accumulation then is loosened from the motion of the car and dropped as particles onto the flour load.

Or, if temperature conditions are right, the whole accumulation becomes a moist glutenous mass and hangs from the ceiling or runs down the walls in wet, paste-like form, developing a sour, musty odor.

An additional problem, perhaps even more critical, is development of mold. If the temperature is "ideal," particularly in the spring and fall, the stagnant, hot, moist air entrapped in the top of the car is conducive to very rapid mold development.

There have been instances where the entire surface of the load was completely covered with mold in just a few days in transit.

Earlier attempts

Most industry efforts to eliminate these problems have been concerned with various methods of loading. (In the early stages of bulk transport, it was thought that if a car was loaded dry it would remain dry until destination.)

Working on this premise, the industry has experimented with: 1) pneumatic loading, which adds to problems by introducing air under pressure with the flour; 2) gravity loading as fast as possible so as to minimize condensation; 3) heating car interior with forced warm air drawn through car for some time prior to loading.

Other attempts included: 4) using approved types of mold inhibitors to try to prevent mold development; 5) equipping each of the six hatches with from five to ten lb of desiccant to attempt to absorb some of the free moisture in the air above the flour load; and 6) washing car interiors during those few months when weather permits, so as to save car liners.

A great deal of expense has been incurred in evaluating these applications — yet the industry still faces the same problems that it did originally.

Constant air turnover

In the proposed system, an intake ventilator, equipped with a special Farr filter and protected by a snow baffle, is installed at top of the break end of the car.

Ventilator's fan pulls through the car 500 cfm of filtered air at all times while the car is in transit, operating off a 12-volt generation system. The generator also charges an eight-cell nickel-iron alkaline battery which powers the ventilation system when car is on siding.

On opposite end of car, another ventilator hood mounts a 10-in. fan for expelling the air.

Inside of car is equipped with baffles which direct intake and exhaust of air toward walls and roof, so that the full area above the flour level is changing constantly.

When the car is first loaded and trimmed, the fan will replace the complete air in top of car twice every minute. After settling has occurred in transit, the air-replacement cycle is once every one-and-one-half minutes.

Fan operates from time the hatches are sealed at the mill until car arrives at the bakery. As the car leaves the bakery, the fan is turned on again and runs continuously to keep interior dry until car arrives back at the mill.

Careful loading helps

The ventilation system will keep the car perfectly dry in transit, but its effectiveness depends to some degree upon a satisfactory method of loading.

Various methods of suction-removal of moisture-laden air have been investigated.

One promising method involves installing breathers on two of the hatches — allowing the outside air to be drawn through them — and applying a suction of at least 3000 cfm on preferably two of the other hatches.

In using this system, the flour stream should be directed toward the incoming air (from the breathers) at all times. This helps break up the flour stream and prevents drawing off through suction excessive amounts of flour.

Final testing ahead

A test air-conditioned Airslide car has been operating since February of this year between one of the Russell-Miller mills and one of the major baking companies. Three more such bulk cars are now being equipped so that the system may be tested in extremely cold mid-winter temperatures.

After a full year's experience with the full scale of temperature variations, the developers of the equipment expect to offer it for sale or lease to the milling industry or the railroads.

However, pending final test results, the following things already have been accomplished:

1) flour has been delivered to bakery in exactly the same condition as it came off the mill;

2) constant circulation of fresh air through the car has absolutely eliminated mold formation;

3) with an adequate suction on the loading system, the ventilator has eliminated condensation in transit;

4) by eliminating condensation and keeping the car interior dry, cleaning time on each trip has been reduced 85 per cent (of the average experience of the industry);

5) since scraping the interior no longer is necessary, need for expensive car relining has been eliminated.

(Bulk Flour Ventilator for Airslide cars, bulk trucks and barges — an experimental development of Russell-Miller Milling Company, Minneapolis 15, Minn. — will, when current operating tests are completed, be manufactured and leased exclusively by Hayes Industries, Box 2018, Commerce Station, Minneapolis 15, Minn.)

5658 on Reader Service Slip.

(Twelve-volt generation system used to power fan and to charge battery is manufactured by Safety Electrical Equipment Corporation, New Haven, Conn.)

5659 on Reader Service Slip.

(Eight-cell nickel-iron alkaline battery is manufactured by Thomas A. Edison Industries, 31 Lakeside Ave., West Orange, N.J.)

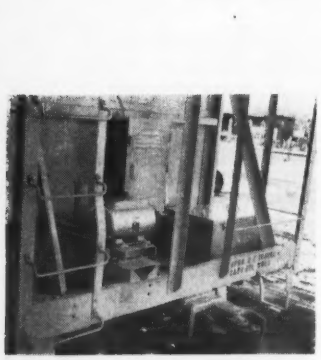
5660 on Reader Service Slip.

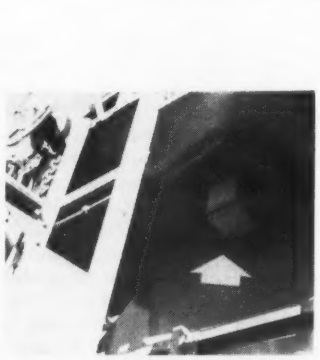
(Airslide car is manufactured by General American Transportation Corporation, 135 S. La Salle St., Chicago 90, Ill.)

5661 on Reader Service Slip.

(Bulk flour trailer is manufactured by Fruehauf Trailer Company, 99 W. Bethune, Detroit 32, Mich.)

5662 on Reader Service Slip.





Left — power generation unit for ventilator, with 12-volt generator in center foreground, regulator relay box in back, battery box at right. Permanent equipment will be far less exposed than these prototype components. At right is one of car's two ventilator hoods (arrow)

From tank-trucks or storage tank, whole fresh milk is pumped through cold milk separator where cream is skimmed off.

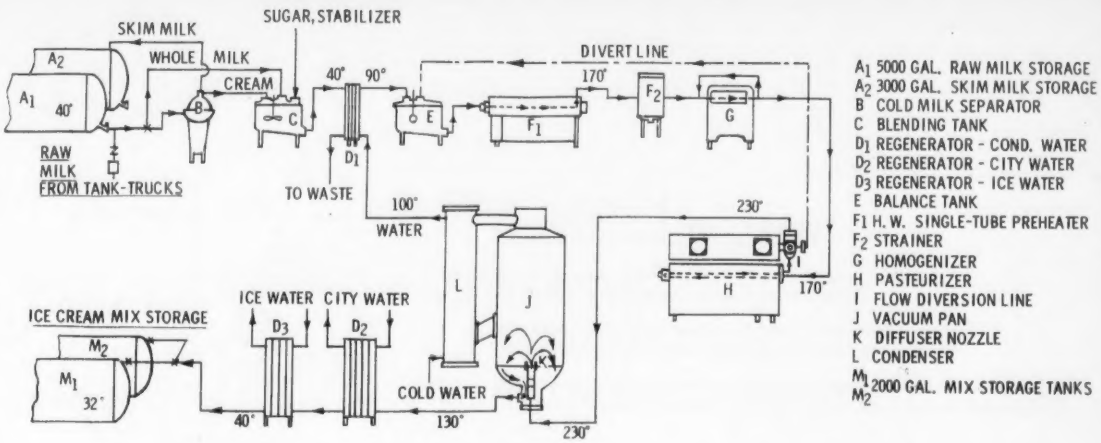
Cream goes to one of two blending tanks, together with whole milk. Sugar and stabilizer are dumped into the same tank on a continuous basis.

From blending tank, mixture is preheated first in a plate heat exchanger by hot water from vacuum pan condenser, then by hot water (single-tube) heat exchanger. Surge tank, with automatic level-control, is located between the two heat exchangers.

Final heating takes place in a UHTST, wide range continuous pasteurizer. Temperature of 230 F is held for 4 sec. Homogenizer acts as timing pump.

Mix is concentrated by flash evaporation in vacuum pan and by evaporation in vacuum pan at temperature of 130 F.

Cooling of concentrated mix is in three steps; temperature is pulled down by cooling with city water in first pass and with ice water in second pass in plate heat exchanger. Final cooling occurs in two 2000 gal storage tanks.



Uses only whole, fresh milk in . . .

Continuous ice cream mix production

Only one operator required

BY W. H. BRAUM, President

BRAUM Ice Cream Co., Emporia, Kan., supplies ice cream for all Peter Pan Ice Cream Stores. High quality and flavor are attained by using only fresh, whole milk for all basic ingredients in mix. Additional advantages gained are the elimination of storage and reprocessing of condensed or powdered milk.

As demand has increased, production has kept pace till now mix-making is on a continuous basis. Process for making ice cream mix has capacity of 450 gal per hr.

To affect the degree of concentration required when fresh whole milk is used, water is evaporated from the mix in a vacuum pan.

Working almost automatically, vacuum pan evaporates from 42 to 44 per cent of water, concentrates mix from approximately 23 to 39-40 per cent solids.

Only one operator is needed to check the various operations of separating, ingredient-mixing, and condensing.

Because of continuity of operation and because only fresh milk is used, balanced mix can be figured in only 40 sec with calculator. All that must be known are the pounds of mix and the butterfat content of incoming milk.

Stabilizer and sugar, the only other ingredients used, are continuously fed into blending tank in correct proportion. Since milk entering system comes direct from tank-trucks and is pumped into outlet line of storage tanks or directly into process line, air entrainment is avoided.

After preheating in two steps (see flow diagram above), mix is homogenized, pasteurized at 230 F and then flashed into vacuum pan. In pan, temperature drops instantly to 130 F with simultaneous evaporation of 3 to 4 per cent water.

At this point, mix contains 23 per cent solids. Vacuum pan completes concentration to 39-40 per cent solids.

Cooling is in three steps as detailed in diagram and caption.

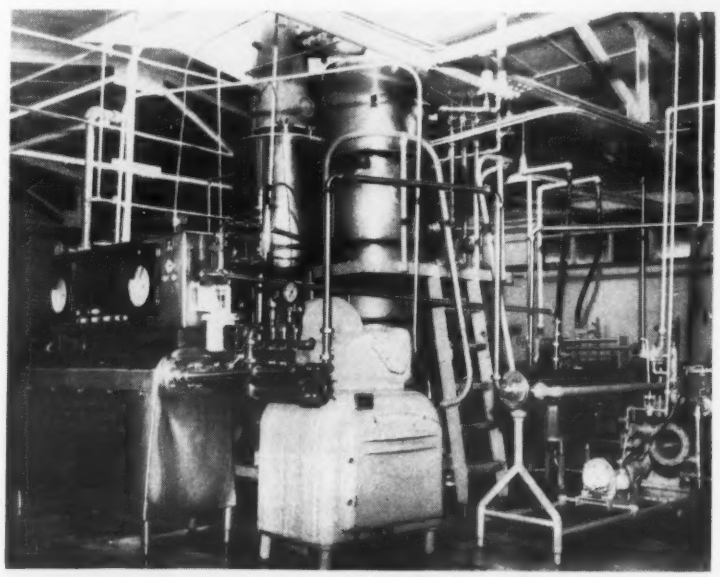
Complete operation is economical in power, water and gas consumption. Bacteria and coliform kill are perfect and whole system can be cleaned in place.

Layout of processing equipment is readily adaptable to low-fat mixes. All that is required are a few minor changes in piping which can be done in a few minutes.

Major pieces of equipment in installation were picked with capacities much higher than are presently required. Therefore when the time comes for expansion, output can be doubled and even tripled with very little expenditure of additional capital.

(Preheater, diffuser nozzle in vacuum pan and "Hi-Heet" pasteurizer are products of the Chicago Stainless Equipment Corp., 5001 Elston Ave., Chicago 30, Ill.)

5663 on Reader Service Slip.



Ice cream mix is homogenized upstream from preheater. Well-engineered system is compact—designed for CIP

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PASTEURIZATION

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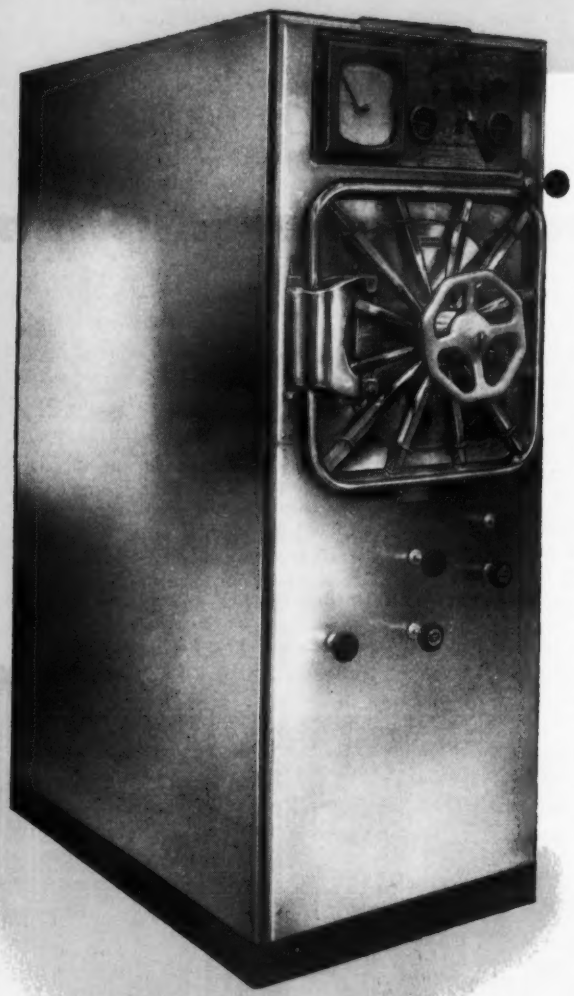

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Crisis for fats

(*Continued from page 25*)

Since hydrogenation removes a very significant amount of linoleic acid from the diet, running into a level of several pounds yearly per capita, the first step would appear to be stepwise elimination of commercial hydrogenation.

The second recommendation would be the substitution in the average dietary of high linoleic fat for low linoleic acid fat in all possible food products.

If the preliminary observations which suggest that fish oils are hypocholesterolemic in their effects are borne out, one could to good advantage recommend a greater inclusion of fish at the expense of meat in the average American diet.

We realize that in taking this position we are to some degree "sticking our necks out". We believe, however, that the time is at hand to do just that. Our own experience in this field dates from 1950.

It should be emphasized that it is not necessary to consume formula diets containing large amounts of vegetable fats in order to lower plasma lipids. In several recent articles published from this laboratory quite palatable mixed diets have been described which are highly effective in this area. One of these is in the November-December 1958 issue of the *American Journal of Clinical Nutrition*, and one in the August 27, 1959 issue of the *New England Journal of Medicine*. More of our thoughts in this regard also are contained in one of a group of articles which appears in the August 1959 issue of the *Journal of the American Medical Association*, under the auspices of the Council on Food and Nutrition.

We would like to emphasize finally that nothing in the foregoing would suggest that we feel that meat, dairy products and eggs should be eliminated from the average American diet. "Prophylactic diets" can probably contain very adequate amounts of these materials so long as they contain the other materials noted above. (*Continued on page 42*)

New 'Liquefreeze' nitrogen freezing-shipping method, proved in test runs, permits processors to . . .

Ship frozen foods any distance safely without ice or mechanical refrigeration

Economical for less-than-carload and less-than-truckload lots

A new, practical way of shipping frozen foods long distances has been successfully demonstrated in repeated test shipments over the past 18 mo.

In one such test, a container of the type shown was filled with frozen foods, trucked from Stockton, Calif., to San Francisco, loaded aboard ship and transported to New York by way of the Panama Canal and Puerto Rico.

Upon arrival, container was opened and found to have inside temperature of −34°F. No ice whatever had been used, either in preparing the container for shipment or in transit, and there had been no mechanical refrigeration.

Similar tests — some involving a month or more in transit — indicate that the new "Liquefreeze" liquid nitrogen freezing-shipping method is not only remarkable in the results it gives, but also economical and practical.

Method is simple — involves basically specially designed, patented insulated containers, 8 by 8 by 8 ft, and liquid nitrogen.

When container has been filled with frozen food product, liquid nitrogen at −320°F is introduced.

Contents of the insulated container rapidly drop in temperature to the selected level as the liquid nitrogen "boils" off in the form of a gas — the result of absorbing heat from the container's contents.

Shipping temperature is selected on basis of the type of frozen food being shipped, length of trip and the temperature desired for shipment upon its arrival at destination. Sufficient liquid nitrogen then is introduced to achieve this initial low temperature.

Costs for the shipper are about the same as for other methods of shipping frozen foods* — but he enjoys the advantage of assurance that his products will arrive in perfect frozen condition without need for any attention en route.

Further, containers are of ideal size for economical shipment of less-than-carload and less-than-truckload lots to the average purchaser who usually does not need the 30 tons of food carried by a rail car, or even the 15 tons carried by truck.

Among major frozen food processors who have conducted test shipments with thoroughly satisfactory results is Libby, McNeill & Libby, Chicago.

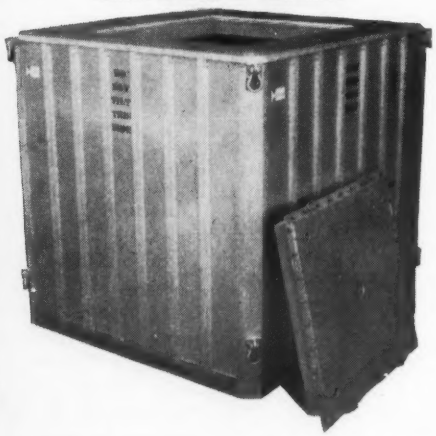
Libby, in particular, reportedly is considering the new process as a means of extending its world markets.

("Liquefreeze" liquid nitrogen freezing-shipping method, and patented insulated containers, are development of Liquefreeze, Isbrandtsen Company, Inc., 26 Broadway, New York 4, New York.)

5665 on Reader Service Slip.

*Cost of the process is made competitive with earlier in-transit refrigeration methods by recovering some of the nitrogen that is "boiled" off, returning it in compressed form to the liquid nitrogen plant and reliquefying it.

Containers, shown being processed with liquid nitrogen, may be eliminated, if desired, as 40-ft trailers and railroad cars may themselves be insulated to serve as "containers"



One type of container — made by Alcoa — has six in. of insulation between two layers of aluminum. Newer container will require less insulation

Create **More** Demand for **More** Products by

Consumer interest in better nutrition has never been higher than it is today. As a result, products backed by strong nutritional claims are steadily gaining an increased share of every food dollar. You can take advantage of this nutritional boom and gain an edge over competition by fortifying with Merck vitamins and amino acids.

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If you have new products in the works, or are looking for ways to stimulate sales of existing products—look first to Merck for the nutritional appeal, nutrients, and technical assistance you need.

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Crisis for fats

(*Continued from page* 38)

Diets for people with marked hyperlipemia in association with advanced atherosclerosis obviously are in a different category. In such diets, it is necessary to eliminate for a time almost all sources of saturated fats if desired lowering of plasma lipids is to be achieved.

Incidentally, I think that if you will look into the best figures available regarding corn and cottonseed oils, you will find that the differential noted in your article is not in line with the facts. Average samples of each material run in our laboratory have shown roughly 50% to 55% linoleic acid.

To be continued next month when we present commentaries of:

Robert E. Olson, M.D.
Ancel Keys, Ph.D.
Raymond Reiser, Ph.D.
William Dock, M.D.

Know your packaging materials

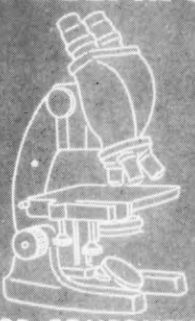
A revision of the basic AMA reference guide to materials, first published in 1955 as Packaging Series 46, new publication contains an up-to-date review of popular packaging materials.

Included are foils, paper, boxboard, films and foam plastics. The physical properties, limitations and applications of each are thoroughly explained by experts from the commercial firms producing the materials.

Included are more than 20 new tables, charts and illustrations, derived from recent packaging data.

("Know Your Packaging Materials," AMA Management Report Number 5, 128 pp, is available at cost of $2 to AMA members, $3 to non-members, from American Management Association, Inc., 1515 Broadway, Times Square, New York 36, New York.)

PELLAR'S



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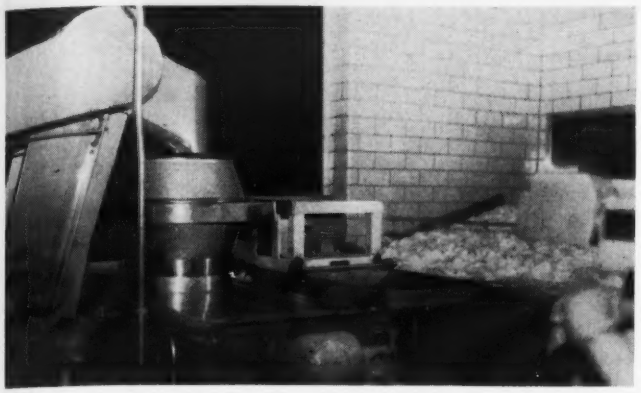


In completely automated production line, cleaned and peeled potatoes are fed by bucket-elevator into slicer from which slices discharge into washer to remove free starch. After washing, slices are drained on conveyor and moved through deep-fat fryer. Fat drains from chips on conveyor which carries them to packaging department where they are salted and packed in various size bags

High-speed potato-chip slicer

Features
- Uniform slices
- Throw-away blades

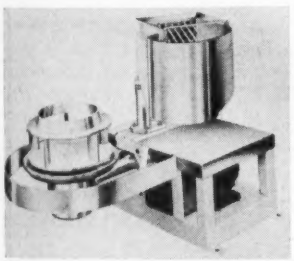
By **FRANK L. BONEM**
Associate Editor

Tapered or uneven thickness of potato slices causes uneven browning in fryer, results in different colored potato chips. Thin edges of tapered chips are fragile and break easily in packages.

Keeping a good, even cutting edge on blades in conventional slicers is a difficult maintenance problem. Necessity to change blades stops production lines.

This problem of maintenance was solved at Seyfert's Foods, Fort Wayne, Ind., by the installation of a centrifugal slicer which revolves potatoes against stationary razor-thin blades.

(*Continued on next page*)



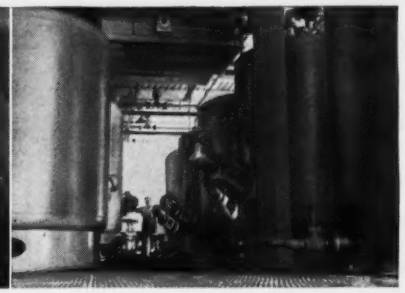
For changing slicing head, clean-up or maintenance; disassembly of slicer is simple. Feed hopper is pivoted 90° and top cover is lifted off. Two main parts of machine are thereby exposed; the rotating impeller in the middle, surrounded at its periphery by the stationary slicing head. Head, which rests on supporting ring around impeller, is removed by lifting it straight up. No fasteners have to be loosened

Dial indicator is used to preset slice-thickness. Once clearance for cut is set, blade replacement will not change thickness of slices. Changing blades is simple—only two screws have to be loosened per blade

What's keeping you from getting TOP MIXING RESULTS?

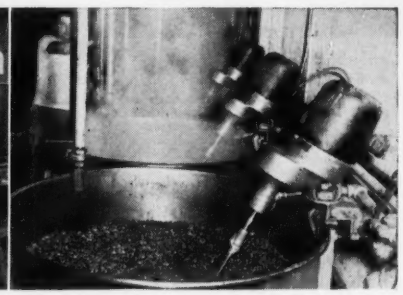
Many things determine how well you mix fluids. Here's a quick review of main points to watch.

1. Mixing pattern? Be sure it's fitted to your process. A vortex like this is good if you're wetting powders, not so good for other mixing jobs. To get competent suggestions on the *right* mixing pattern, call in your experienced LIGHTNIN Mixer representative.



2. Tank shape? For best possible mixing, experts recommend a "square" batch (tank height equal to diameter). But don't hesitate to use a special shape if it will help your process. You can get excellent mixing in *any* tank with LIGHTNIN Mixers.

3. Changing requirements? Build versatility into your mixing line—with LIGHTNIN Portable Mixers. You can always expand at low cost by adding a unit. Careful selection can also enable you to adapt the LIGHTNIN Portables you buy now to other jobs later on.



4. Hard-to-handle materials? You can mix fluids of many thousand centipoises viscosity with LIGHTNIN Mixers. Handle heavy suspended solids, pulps, fibers, fine powders. Special impellers give you wide choice of cutting, beating, whipping, and other effects.

You're sure about results when you mix with LIGHTNIN Mixers. Every one is guaranteed, unconditionally, to do the job for which it is recommended. For prompt service on fluid mixing, just call your LIGHTNIN Mixer representative. Look him up in Thomas' Register or the Yellow Pages of your telephone directory. Or write us direct.

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"GENTLE-IZED" Spray Drying
captures true food flavors
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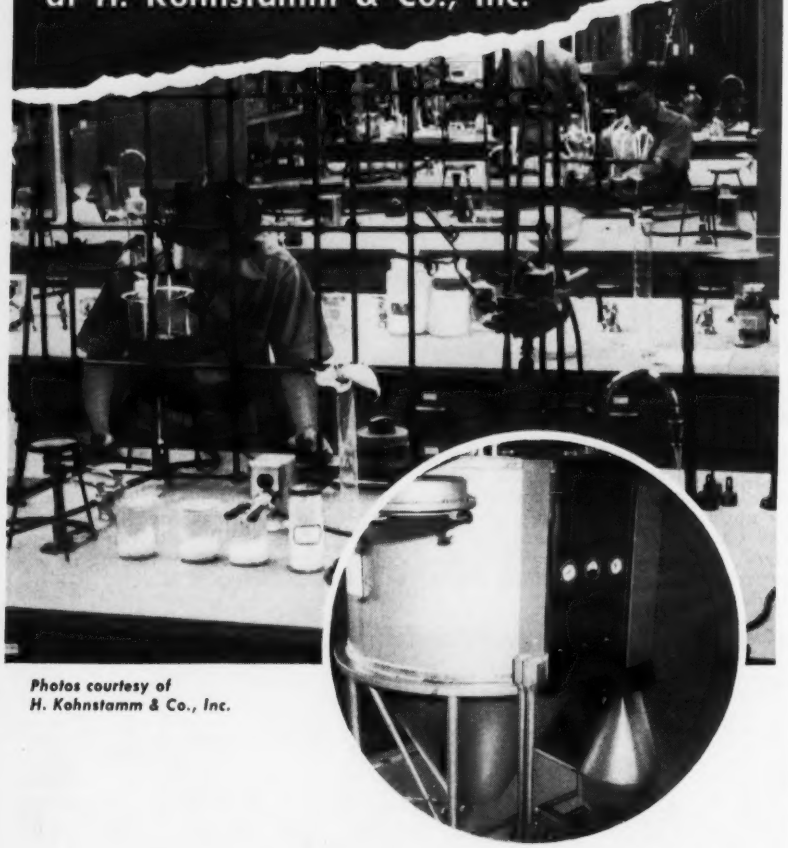


Photos courtesy of
H. Kohnstamm & Co., Inc.

At H. Kohnstamm & Company, Inc. skilled food chemists are producing flavors of the highest quality through constant research and product development. Nerco-Niro Spray Dryers are also at work at Kohnstamm processing these liquid flavors into uniform dry powders. Why? Because Kohnstamm found that Nerco-Niro Gentle-ized Spray Drying best preserves their chemist's original flavor formulation by transforming the flavor emulsion into minute granules of exceptionally long shelf life without loss of activity.

The Nerco-Niro engineering staff is available for consultation concerning your specific problem whether it be research, testing, engineering or custom drying.

Nerco-Niro Spray Dryer Div.
NICHOLS
ENGINEERING & RESEARCH CORPORATION
70 Pine St. New York 5, N. Y.
San Francisco Indianapolis
Montreal

NERCO NIRO®

5670 on Reader Service Slip.

processing

(*Continued from preceding page*)

Throw-away blades

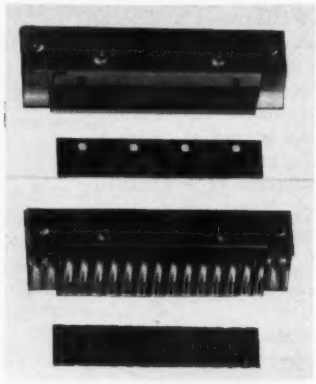
"Razor blades", ¾ in. wide by 4⅛ in. long, are mounted vertically in slicing head. After usage, they are—like razor blades—simply discarded.

To minimize nicks in blades due to foreign material, blades are protected at two points. First safeguard is a grating located in feed-hopper. As potatoes enter machine, they pass over this grating and sand and stones fall through.

Second safeguard is made in the design of the blade holder for removal of remaining sand before it gets to blade.

Feed-hopper is spiraled to initiate rotating motion to potatoes. As they enter machine proper, they fall into impeller rotating at 218 rpm.

Centrifugal force causes spuds to move toward periphery and holds them against vertical guides in impeller. As they rotate, they pass across slicing knives in head. Potato slices fall through bottom of basket.



Two types of knives are available; one for cutting plain slices and one for cutting corrugated slices. Razor-thin blades are shown mounted in knife holders at top

To change slicing head, all that is necessary is to swing hopper back, lift head out and insert stand-by head. Since change only takes 10-15 sec, production lines need not be shut down.

Because uniform slices are produced—over 90 per cent of slices are within 0.004 in.—

Have you changed your address recently?

● If so, you'll want to insure that your copy of FOOD PROCESSING reaches you without interruption. Just send us your new address . . . use the convenient form below.

Please answer all questions in regard to your new affiliation, and in addition give us your former address including company, city and state.

mail this request to
READER SERVICE DEPT.
FOOD PROCESSING
111 East Delaware Place
Chicago 11, Illinois

Former Company Affiliation .....

Former Address .....

Your Name ..... Present Title .....

Present Company .....

Main Product .....

Rating of Company .....

Street Address .....

City ..... Zone No. ..... State .....

production costs are held down. According to Joe Reed, plant superintendent, inspectors only discard those chips caused by bad potatoes.

Machine produces over 1000 lb of chips per hour, has replaced two conventional slicers. Top capacity in terms of raw potatoes is 15,000 lb/hr.

Downtime due to blade changing is a thing of the past, as is cost of sharpening blades. New blades cost less than razor blades.

(Potato slicer is manufactured by Urschel Laboratories, Inc., Valparaiso, Ind.)
5671 on Reader Service Slip.

Triple mixing action with ribbon blenders

Various types of agitators are designed to meet different mixing requirements. Triple mixing and blending action results from rotating motion plus two longitudinal motions which are in opposite directions.

Blenders and mixers can be used for powders, pastes and liquids. Their construction features, dimensional and mechanical specifications are given in eight-page bulletin.

Literature also describes several types of pre-sifting and final sifting machines available for mounting on blenders or mixer-tanks.

("Day Ribbon Blenders," Bulletin No. 800-159, is available from The Cleveland Automatic Machine Company, J. H. Day Company Division, 4932 Beech St., Cincinnati 12, O.)
5672 on Reader Service Slip.

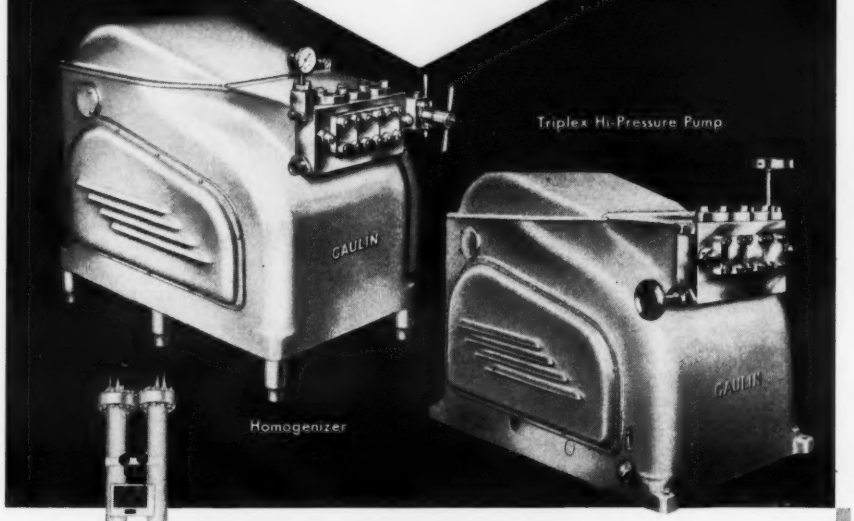
Pre-registered problems solved by task force

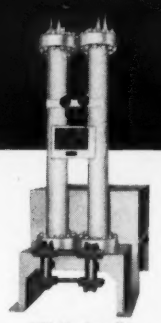
Program of advance registration for processing problems has been initiated for 27th Chemical Exposition by Sprout, Waldron & Co., Inc.

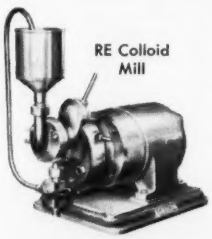
Task force has been assembled to review, analyze and compile available data on all problems submitted prior to November 25th.

(*Continued on next page*)

GAULIN
G. T. A.
(GAULIN TECHNICAL ASSISTANCE)
Is the key to Savings
IN
MIXING OR MOVING
PRODUCTS




HX-Hydraulic
Pressure Exchange Pump


RE Colloid
Mill

If you disperse, emulsify, blend particles . . . or pump, control, move liquids, Gaulin Technical Assistance *plus* Gaulin Equipment will bring you new product improvement and cost-saving solutions to your operations.

Gaulin Technical Assistance starts with the GTA library of product information. Ask for all or specific bulletins on each piece of equipment. Then, call for specialized GTA to bring you experienced advice and factual data on the best way to mix or move your product.

Fifty years' experience in analyzing fluid systems plus complete laboratory sampling and test facilities make *Gaulin Technical Assistance* the "extra" man in your product or process development program.

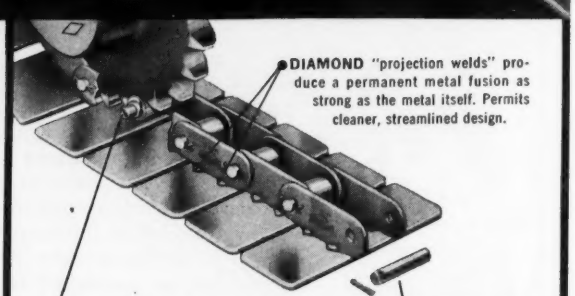
GAULIN
GAULIN
GAULIN

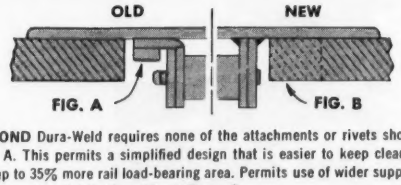
DIAMOND *dura-weld*

TOP PLATE CONVEYOR CHAIN

DIAMOND Dura-Weld top plates are "projection welded" to the roller chain linkplates, forming a permanent metal fusion. This technique requires no attachments, rivets or extra fittings which add to the weight and cost of other chains. You get a lighter, smoother running chain that *costs less to buy and less to maintain* . . . yet is designed to operate continuously at *maximum loads and speeds.*

Wherever flat top conveyors are used for intra-machine processing, bottling, capping, labeling, etc., you can cut costs and speed up production with new, streamlined DIAMOND Dura-Weld Conveyor Chain.

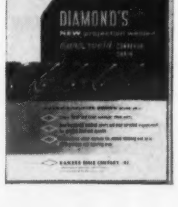

DIAMOND "projection welds" produce a permanent metal fusion as strong as the metal itself. Permits cleaner, streamlined design.
DURA-WELD's case hardened bushed joints and deep sprocket engagement assure smooth chain operation under maximum power, load and speed conditions.
DURA-WELD is easily detachable at any joint. Dura-Weld links may be attached to existing roller chain of the same general type and may be used on the same rails.



DIAMOND Dura-Weld requires none of the attachments or rivets shown in Figure A. This permits a simplified design that is easier to keep clean, and gives up to 35% more rail load-bearing area. Permits use of wider supporting rails for greater distribution of load, Figure B.

DIAMOND *Dura-Weld Conveyor Chain is available from your Diamond Distributor's Stock!*

Write for **FREE** folder!
Gives complete listing of DIAMOND Distributors and full description, specifications and prices of DIAMOND Dura-Weld Top Plate Conveyor Chain.



COPYRIGHT 1958 DIAMOND CHAIN CO., U. S. A.

DIAMOND CHAIN COMPANY, INC. Dept. 410 • 402 Kentucky Avenue, Indianapolis 7, Indiana

A Subsidiary of American Steel Foundries

Offices and Distributors in All Principal Cities

5674 on Reader Service Slip.

processing

(*Continued from preceding page*)

Operations of task force will include researching literature, studying results of laboratory and field reports and reviewing files. Time permitting, laboratory tests may be conducted.

Method of operation will follow these rules:

1. Problems must deal with size reduction, classification, mixing, blending, pelleting, densifying, or conveying of solids and/or slurries.

2. Submission of problems for analysis is restricted to individuals who will be in attendance at Chemical Exposition.

3. Pre-registered problems will be researched on a first-come, first-served basis. Data will be turned over to unit process specialist who will be on hand to discuss it further during week of Exposition.

Problems should be submitted to Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pa., on letterheads or special forms available from company.

Sifts 100,000 lb/day

As cracker meal and breading mixes pass through 4-tiered permanent magnetic grate, iron particles are drawn by magnetic circuit to align themselves on underside of tubes, shown above.

Because particles are underneath tubes, and subsequent flow of material impinges on top and sides of tubes, iron particles cannot be dislodged.

Drawer-type housing is located beneath holding tank, just ahead of final bagging operation.

(Magnetic Grates are a product of Eriez Manufacturing Company, 75 Magnet Drive, Erie, Pa.)

5675 on Reader Service Slip.

Plants, Companies, Personalities

The Pillsbury Company

has appointed Van R. Holmes, formerly manager of the company's grocery products plant at Hamilton, Ohio, to the newly created job of manager of mix manufacturing. Lester C. Tuttle succeeds Holmes as Hamilton plant manager. Normal O. Sanders has been appointed manager of the firm's refrigerated foods plant at East Greenville, Pa.

Standard Brands Incorporated

is establishing a medium-size bakers' yeast plant in San Juan as a participant in Puerto Rico's "Operation Bootstrap" development program. The plant will use some of Puerto Rico's annual 60-million-gal production of blackstrap molasses as basic material, and will sell most of its production in the local market.

Cook Chocolate Company

Chicago, Ill., announces appointment of M. O. Ricker, formerly with Walter Baker Division of General Foods, as director of research and quality control.

Paul A. Dunkel & Co., Inc.

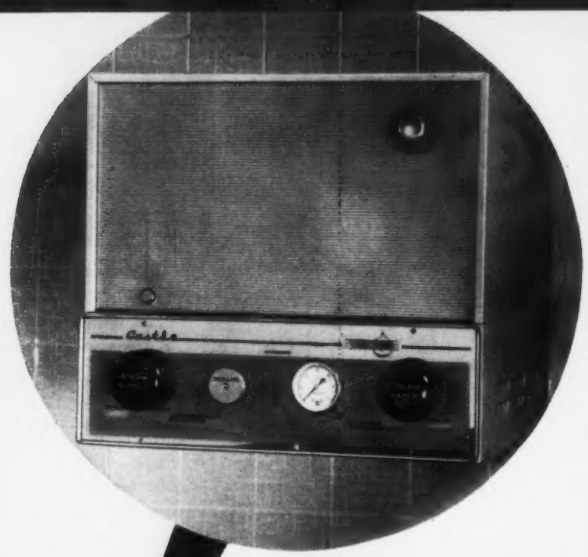
Jersey City, N.J., importers and processors of vegetable gums, has appointed Charles M. Ferri sales and technical director. He will be in charge of quality control, new product development and technical service.

Pet Milk Company

St. Louis, has elected Robert O. Jenkins a director. Jenkins is vice president of the parent firm and executive vice president and general manager of its Pet Dairy Products Company subsidiary.

(*More on page 61*)

For more information on product at right, circle 5676 see information request blank opposite last page.



CASTLE-SELAS, The Castle Steril-Aqua: CES recently announced Steril-Aqua, newest and most economical method of producing high purity water (sterile when required) for the process industries.

CES FOR INDUSTRY

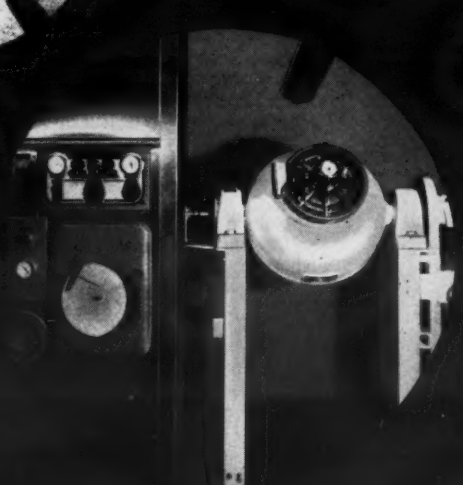
Castle Engineered Sterilization—Know-how based on accumulated experience in the industrial fields—new products to help you do the job.

CES has pooled resources, knowledge and experience with leaders like Selas, Celanese and Pfaudler to develop these important new products for use in the Food, Chemical and Pharmaceutical industries. Look for them on display at the CHEM SHOW in New York at Booth No. 1033.

CES is a program developed to bring to industry technical assistance in solving sterilizing and decontamination problems. This program is at your disposal without cost or obligation.

VISIT BOOTH NUMBER 1033 *at the* **CHEM SHOW** Nov. 30 to Dec. 4

CASTLE-CELANESE, The Castle BPL Equipment: CES has new equipment for vaporizing Celanese Beta-Propiolactone to sterilize contamination areas. Complete laboratories, storage rooms and work areas may now be sterilized, a formerly impossible task.



Castle

STERILIZATION

Fred Wheelwright, Manager, Industrial Sales:

"Two kinds of difficulties arise in the selection of process equipment. The *first* consideration, process efficiency, gives us no difficulty at De Laval. Well-documented performance specifications are reinforced with thorough pilot plant trials at De Laval laboratories when necessary. Each piece of De Laval process equipment is *known* to be capable of doing its job at time of sale.

"The *second* is the joint consideration of tight space availability, scarce manpower and budget. Our success, too, in meeting the needs of space and manpower economy – and budget – is borne out by many thousands of installations. It reflects a performance bonus from the design ingenuity of equipment just *naturally* built to perform with a maximum economy of space and manpower. Three examples are shown here."

For further information, write to De Laval.

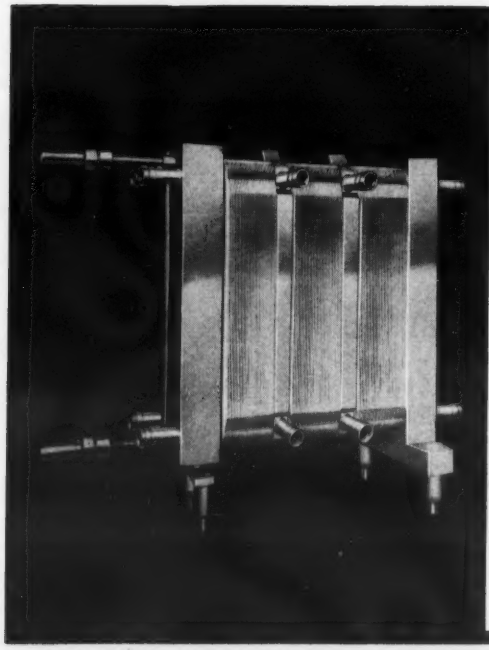
DE LAVAL

Dept F-6

THE DE LAVAL SEPARATOR COMPANY
Poughkeepsie, New York
5724 N. Pulaski, Chicago 46, Illinois

DE LAVAL PACIFIC COMPANY
201 E. Millbrae Avenue. Millbrae, California

THREE DIFFICULT ... MET BY



Orange juice pasteurizer squeezes BTU's to the limit

Problem: A 55° Brix concentrated orange juice required heating to 190°F. for pasteurization followed by cooling to 35°F. The processing unit was required to be non-affected by the citrus juice, inherently clean and easy to service, in addition to providing high heat economy.

Solution: A small 3-section De Laval Plate Heat Exchanger. Syrup is: (1) brought from 70°F. to 154°F. by regeneration; (2) heated from 154°F. to 190°F. using vacuum steam at 200°F.; (3) cooled from 190°F. to 106°F. by regeneration; (4) then chilled to 35°F. by 24°F. brine.

High-efficiency transfer is typified by the 10-11°F. differential in the heating and cooling sections. Solid stainless steel plates proved immune to the corrosiveness of the citrus juice and at the same time provided a highly sanitary heat exchange surface. Plates are easily cleaned in place by back-flushing, yet every inch of transfer surface is quickly and easily accessible for visual inspection.

No other heat exchanger offers comparable space economy and operating efficiency. De Laval Plate Heat Exchangers range in size to fit every process requirement – are easily increased in capacity at any time, by the addition of more plates. Plate Heat Exchangers can be sectioned for multiple exchange processes or for two or more completely independent heat exchange operations.

Full information on this combination of versatility, performance and economy is available at no obligation from De Laval.

"3-D" grader pays off handsomely in "shell game"

Problem: Existing battery of graders were separating in-shell walnuts into 3 standard government grades but producing a down-grading of 18 to 35%. A more efficient classification system that reduced down-grading losses was desired.

Solution: A single De Laval Syncro-Matic Separator not only replaced the half-dozen existing graders but reduced down-grading to less than 0.8%! The increased value of the properly graded walnuts payed for the Syncro-Matic in one season.

The unique three-directional motion of the Syncro-Matics accounts for their unusual efficiency. Vertical motion is added to horizontal and gyratory motion to provide *maximum* exposure of products to grading screens. For example, a 6-ton lot of walnuts having a feed distribution of 65% "large," 14% "medium" and 21% "babies," was graded by a Syncro-Matic at the rate of 10,000 lbs./hr. with the following efficiencies:

Large 99%, Medium 96%,
Babies 100%

Single deck, double deck and triple-deck Syncro-Matics are available in regular and stainless steel, adaptable to any type of screen or bolting cloth. Put this "whirlwind" of classifying efficiency to work in your plant if you need higher throughput, maximum separation efficiency — more space for other operations — or all three. For further details, drop us a line.

PRODUCTION REQUIREMENTS DE LAVAL PROCESS EQUIPMENT

CENTRIFUGES • PLATE HEAT EXCHANGERS • VIBRATING SCREENS • COMPLETE PROCESSES

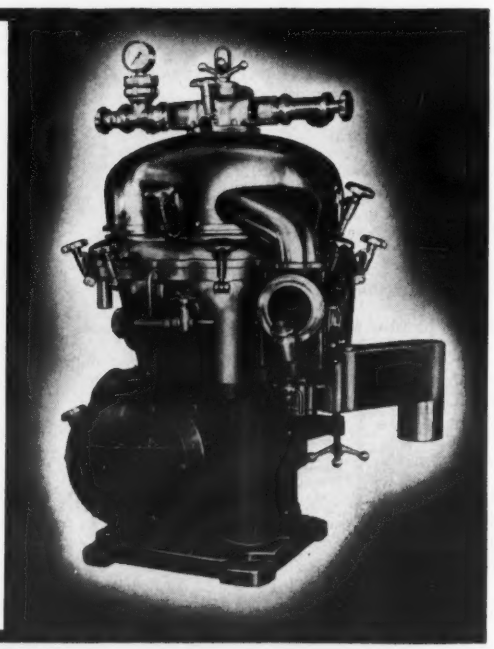
Centrifugals clean coffee concentrate as filters fail on fines

Problem: Filters used to remove undesirable "fines" from coffee concentrates were slowing production due to screen clogging and the need for frequent cleaning. Needed was a *steady* flow of clarified concentrate to boost both production and quality.

Solution: The bulky and troublesome filter was replaced by a De Laval Self-Cleaning Centrifuge. The immediate result was a trouble-free continuous source of clear coffee concentrate at the push of the "start" button. Constant concern over clogging and cleaning was eliminated, giving way to automatic centrifugal operation. An extra benefit was the removal of minute oil particles from the concentrate, thus eliminating a tendency of the dried product to "lump" in the package.

The general problem of fines removal is the particular concern of three different De Laval Centrifuges. The type and quantity of fines and the capacity requirements influence selection of the right model for optimum operating economy. In this selection, De Laval's unmatched experience in centrifuge design and application can be of concrete help. Special problems are often resolved in De Laval's pilot plant to insure that you will be delivered the most efficient and economical centrifuge available.

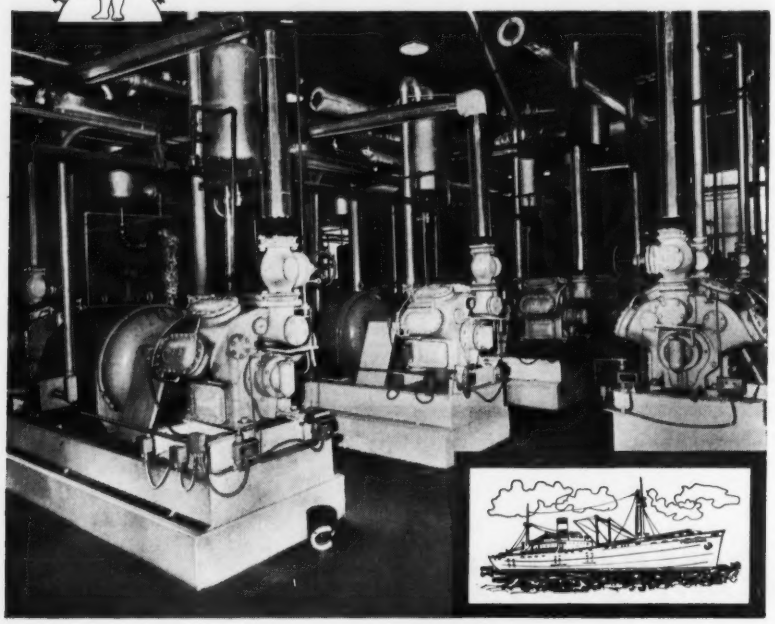
You are under no obligation when you call on De Laval for practical assistance on any centrifugal separation problem. Just drop us a line and let us know where to call.



5677 on Reader Service Slip.

Breakfast orange juice fresh from Florida, thanks to Vilter

Tropicana Products—world's largest producer of chilled citrus and fruit juices.



View of Vilter VMC compressors installed in the Tropicana Products Plant at Port Canaveral, Florida. Inset shows the S.S. Tropicana which carries 1,500,000 gallons of chilled orange juice every eight days between Port Canaveral and New York.

The high consumer acceptance of Tropicana's orange juice is the result of a special processing and storing method. This makes possible the year-'round delivery of chilled full-flavored, vitamin-rich, orange juice over Tropicana's entire marketing area.

One key to their success is the reliable refrigeration supplied by Vilter for cooling and processing fresh juices at their various plants. Vilter equipment, at Port Canaveral, for instance, includes 16 VMC compressors, and Vilter ammonia liquid intercoolers and ethylene glycol chillers. The entire Vilter refrigeration system functions smoothly and efficiently to handle Tropicana's large daily requirements of many thousands of gallons. Refrigerated storage facilities hold 3,000,000 gallons at Port Canaveral.

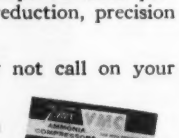
The dependable operation and efficient performance of Vilter VMC compressors is the result of continuing engineering improvements: protection against refrigerant slugs, built-in capacity reduction, precision manufacturing and factory-run-in tests.

For help with your refrigeration problem, why not call on your nearest Vilter Distributor?

Sold and installed by Vilter Distributor, W. L. Filbert, Miami, Florida

Vilter® refrigeration air conditioning

Air Units • Ammonia and Freon Compressors • Booster Compressors Baudelot Coolers • Water and Brine Coolers • Blast Freezers Evaporative and Shell and Tube Condensers • Pipe Coils Valves and Fittings • Pakice and Polarflake Ice machines.



Write for Bulletin 817 to The Vilter Manufacturing Company, Dept. D-901 2217 South First Street Milwaukee 7, Wisconsin

5678 on Reader Service Slip.

How to choose rotary feeders

Rotary feeders can be used as feeders, airlocks or explosion checks. What feeder-rotors look like and how feeders can be applied in systems are illustrated and described.

Four-page bulletin is written by an engineer for engineers and purchasing agents. Sectional drawings show four designs of feeder-rotors; flow chart shows five different possible feeder applications.

("Tips on Choosing Rotary Feeders," Bulletin I-43, is available from Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pa.)
5679 on Reader Service Slip.

Teflon-lined flexible connectors

Stainless steel wire braid on the outside, Teflon on the inside add up to rugged flexible hose. By adding SS male and female fittings hose becomes connector.

Complete line of connectors and various types of fittings for them are contained in 16-page bulletin. Detailed specifications and dimensions are given.

("American flexible connectors of Teflon," Bulletin TC-101 is available from Anaconda Metal Hose Division, The American Brass Company, PO Box 791, Waterbury 20, Conn.)
5680 on Reader Service Slip.

Slices 500-pound barrel cheese in one operation

Hydraulically operated cheese cutter will slice barrel of cheese into pre-selected shapes and sizes.

Two-page data-sheet covers details on machine and its operation.

("Barrel Cheese Cutter" data-sheet is available from the General Machinery Corporation, PO Box 285, Sheboygan, Wisconsin.)
5681 on Reader Service Slip.

Produces sterile water from boiler steam

System operates on basic principle that all contaminants in steam are entrained in particles of moisture.

Raw boiler steam enters steam separator where heavier moisture-droplets and solids are separated by centrifugal force. These droplets are collected and discharged.

Semi-pure, semi-dry steam then passes through hydrophobic liquid-gas separator. This separator will not allow any water to pass through it. Separator element rejects last remaining liquid which is discharged.

Pure vapor enters heat exchanger where it is condensed to sterile water. In smaller units, volatile gases are removed by an ejector system; in larger units, a degassing chamber is used.

Capacities of system range from 5 to 500 gph. Small systems are designed for manual control while larger systems are made with manual, remote or automatic control.

Eight-page bulletin contains schematic diagrams, specifications and detailed discussion of major features of the system.

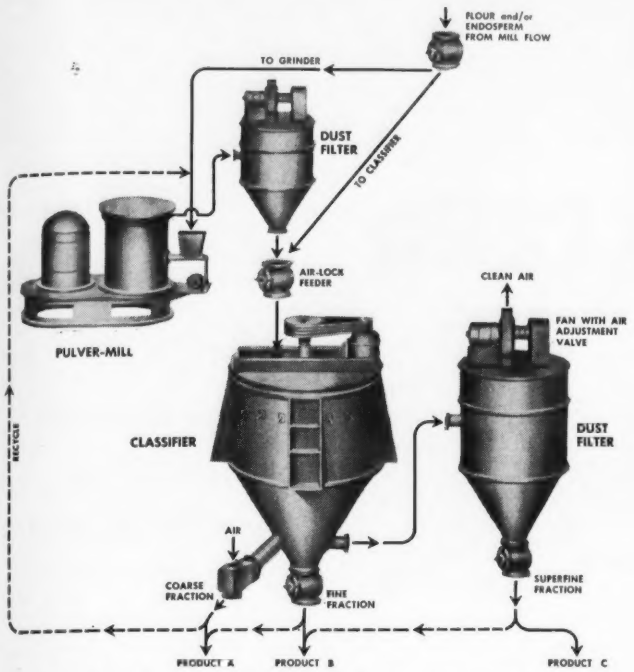
("Steril-Aqua System," Bulletin No. IN-201, is available from Wilmot Castle Company, 1934 E. Henrietta Rd., Rochester, N.Y.)
5682 on Reader Service Slip.

Kills foam at 10 to 100 ppm

Water-dispersible silicone defoamer for aqueous systems is generally effective at concentrations in range of 10 to 100 ppm. It has wide range of applications, will increase capacity and speed production.

Recent price reduction lowers its cost approximately 5 per cent. Price list and complete description are presented in 4-page bulletin.

("Antifoam B," Bulletin 4-403A, is available from the Dow Corning Corporation, Midland, Mich.)
5683 on Reader Service Slip.



Heart of system is an air classifier which separates coarse, fine and superfine fractions

Flour formulation . . . to bakers' needs

Low-micron refining system produces effective starch-protein shifting

A complete flour refining system is now available to all millers. With this system, flour to customer's specifications can be economically produced — and reproduced regardless of mill location, crop season, variety or climate.

Conventional milling produces flour that consists of particles small enough to pass easily through finest bolting cloth. Yet particles vary in composition and size-range, for grain interior is not homogeneous.

Within one flour the following particles or "fractions" can be distinguished: various sizes of endosperm flour particles, cell-wall matter, free starch granules, particles of free protein and starch particles with protein adhering to them.

Classification or separation of these portions of flour into individual groups or fractions is made according to physical properties by an air classifier in the refining system.

In this system, desired end-product is achieved by very close control of air currents and centrifugal forces.

Thus it is possible to set up and consistently maintain standards by removing certain particles — or portions of them — and if desired adding others.

As a result each load leav-

(*Continued on next page*)

ANYWHERE with . . . . .
WENDWAY

CLEANER, QUICKER CONVEYING OF WRAPPED OR UNWRAPPED FOODS

Wendway efficiently conveys food products of any kind . . . up, over, down and around to any point in your plant. Wendway eliminates multiple handling, saves man-hours, floor space and equipment. Wendway can solve your conveying problems and make you more profits, too!

As sliced cold meats travel by on stainless steel Wendway belting, operator labels each type as they proceed to the automatic packaging machine.

Packages, cartons or boxes ride perfectly on Wendway's smooth, silent belting. Products stay clean and unhandled from one operation to the next.

Here you see sliced luncheon meats travelling from wrapping machine to bag sealing station and on to packing station. Wendway belt speeds are synchronized to desired production speed.

Where solid belt conveyors are needed, canvas, Neoprene rubber, etc., can be supplied to meet the specific requirement. Remember . . . in your plant you can go *Anywhere* with *Wendway!*

USP

Gentlemen: Please send me complete information about the versatile Wendway Conveyor Systems for _____

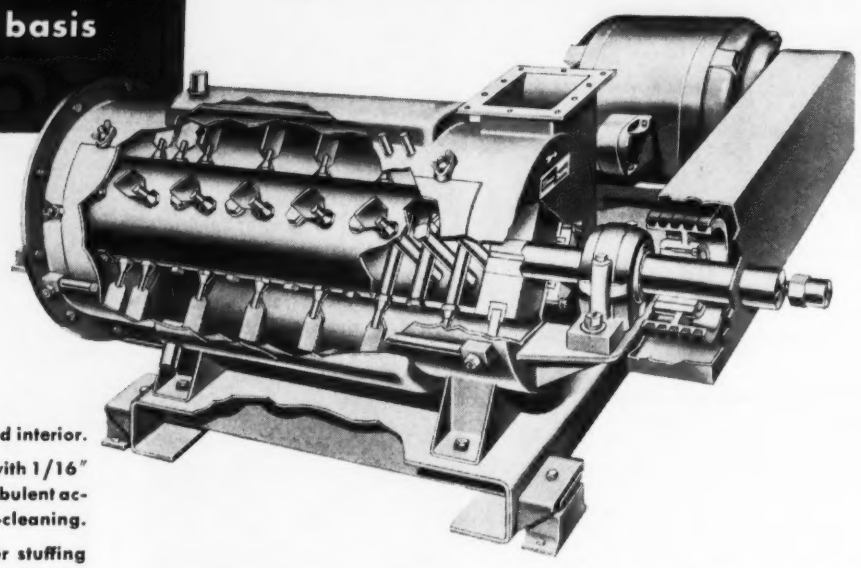
Name _____
Company _____
Street _____
City _____ Zone _____ State _____
☐ Please have a Wendway engineer contact me at once.

5684 on Reader Service Slip.

There's one sure way to get intimate mixing of dry and semi-dry material on a continuous basis

Strong Scott

TURBULIZER®



EXCLUSIVE TURBULIZER FEATURES

- Heavy steel shell with machined interior.
- Paddles revolve at high speed with 1/16" clearance to shell, creating a turbulent action that makes Turbulizer self-cleaning.
- Choice of lip type, air purge or stuffing box seals. All are of split construction for quick disassembly. (Lip type seal shown.)
- Hinged door is machined as an integral part of the shell giving a perfectly smooth interior surface.
- May be equipped with jacket up to 150 PSI for heat transfer medium.
- Hollow rotor shaft for heat transfer medium gives added temperature control.
- Inlet nozzles available for adding liquids.
- Quick acting heavy lug type catches—no nuts or bolts to remove.
- Tangential inlet and discharge prevent material hang-up.
- Heavy duty outboard bearings.
- Rotating joints for easy connection to heat transfer medium source.

The Turbulizer solves many dispersion problems in the chemical and food industries. Adjustable-pitch paddles, revolving at high speed, result in the combined action of turbulence, shear and impact providing intense dispersion. These actions can be varied to obtain desired results on a specific material.

A completely smooth inner surface with 1/16" clearance paddles, assures thorough mixing, eliminates material hang-up, leaves no dead pockets of unmixed material and provides a self-cleaning operation.

In addition to the numerous features shown here, advantages of the Turbulizer include better product uniformity, increased production, plus lower labor, installation and up-keep costs.

Write for complete details...

Please send information on the Turbulizer

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

The Strong Scott Mfg. Co.

451 TAFT STREET NE • MINNEAPOLIS 13, MINNESOTA

EQUIPMENT DESIGNED FOR BETTER PROCESSING

5685 on Reader Service Slip.

(*Continued from preceding page*)

ing plant is uniform. Baker no longer has to test flour as it is received and adjust his dough-formula accordingly.

Size of dust filters is held to minimum because classifier uses small volume of air. Therefore less floor-space is needed.

(Flour refining system is produced by the Sturtevant Mill Co., 1 Harrison Sq, Boston 22, Mass.)

5686 on Reader Service Slip.

Impulse Extraction of Protein From Vegetable Material

Pilot plant in England now producing edible protein concentrate

Impulse extraction, a process developed by I. H. Chayen, a British chemical engineer, for rendering fat and oil from bones and other animal material without the use of heat, is now being used to extract protein and oil from vegetable material.

Pilot plant is now in operation in London, England.

In the process, a modified hammermill (see diagram) mechanically generates shock waves in a falling stream of water. Hammermill is driven by 90 horsepower to create tremendous impact as each hammer bar strikes the water.

Shock waves, thus generated, are in the sonic range and are transmitted in all directions through the water stream. These shock waves rupture cells containing protein and oils.

In the case of rendering bone or other animal material, water carries the fat, still solid, away from the protein. Two products can then be purified and collected separately.

In applying the process to vegetable materials to extract protein and oils, alkaline water is used to carry the shock-waves rather than ordinary water. The alkaline water dissolves the proteins

(*Continued on page 55*)

Potato Flakes

Buflovak atmospheric drying techniques produce a better flake, more economically. Easily reconstituted, the product returns to its original mashed form, retaining all of the desired qualities of flavor, texture, and color.

Tomato Flakes

Dried from pure tomato paste containing no additives or stabilizers by a Buflovak dehydration technique. The new product has superior color, flavor, storage stability, and excellent reconstitutive properties.

Dry Corn Syrup

New instantaneous drying and quick cooling system produces a colorless glass-like flake of pure corn syrup solids. The flakes can be ground and classified for sizing to selected particle requirements.

Vital Wheat Gluten

A new one-step technique, using a Buflovak Spray Dryer, continuously produces a powdered product. The color, vitality, and high protein content are retained. Reconstituted gum gluten has excellent native quality.

Instant Tea

A continuous process, involving counter-current extraction, concentration, and instantaneous drying, was developed at Buflovak to improve this product. Color, aroma, solubility, and flavor assure a high quality convenience food.

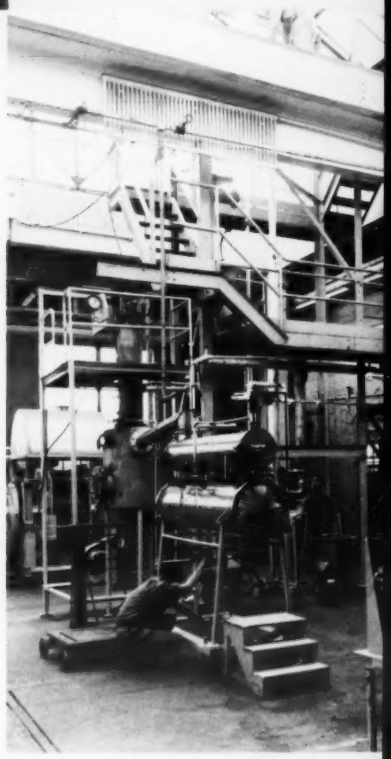
Buflovak equipment shapes today's newest foods

Dry soup mixes or tomato flakes, frozen juice concentrates, instant tea — many of today's fast growing convenience foods had their beginning at Buflovak.

Working closely with progressive processors, Buflovak engineers develop new production techniques and equipment to create modern miracles in prepared foods.

Buflovak builds a complete line of equipment for evaporation . . . drying solvent recovery . . . crystallization . . . extraction . . . cooling, and other key food processes. Based on test results or your specifications, experienced engineers can impartially recommend the equipment proven best for your job.

And Buflovak assures on-schedule delivery and continuing customer service to speed your production, increase your profits. Send for Catalog 386 "Buflovak Processing Equipment," Catalog 381 "Buflovak Customer Service Laboratory."



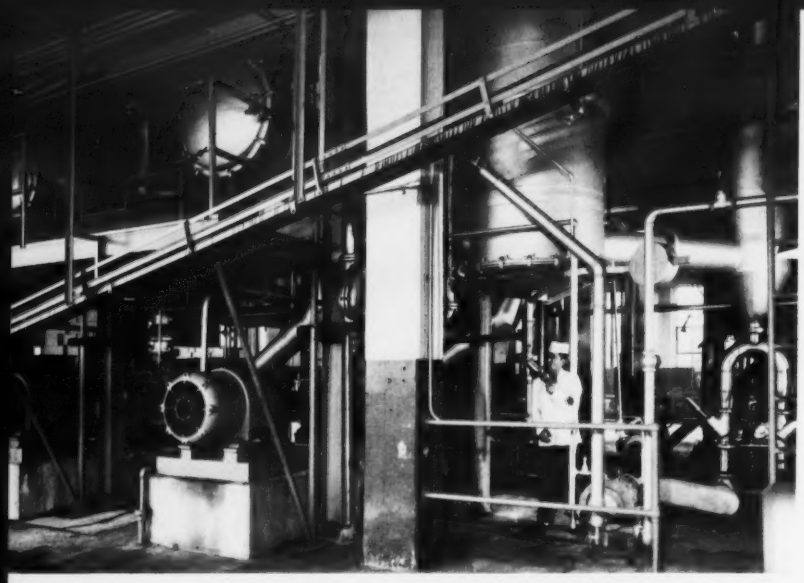
Buflovak Lab – a completely equipped research center where you can pilot test products in beaker or carload lots. Over 7500 processing problems have been solved here.

BLAW-KNOX

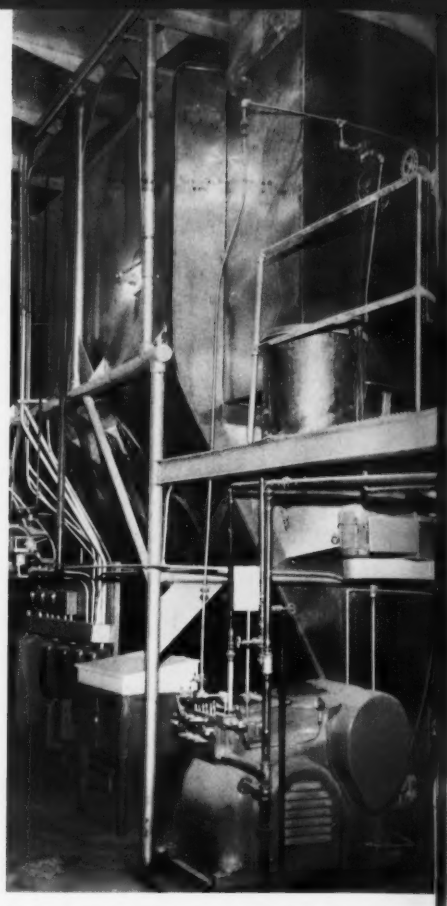
BLAW-KNOX COMPANY

Buflovak Equipment Division

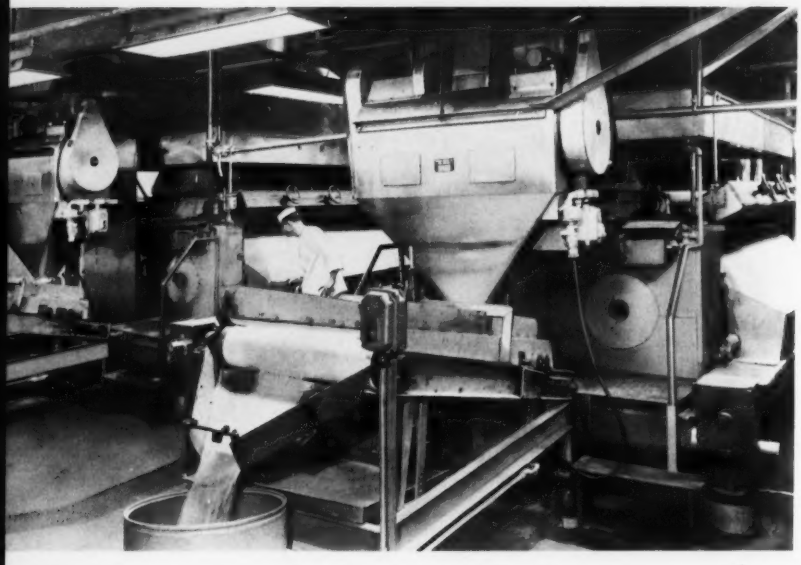
1559 Fillmore Avenue, Buffalo 11, New York



Triple-effect evaporator has increased tomato paste production over 100% at American Home Food's Oakland, California plant.



Spray Dryer is used by Mid-West Solvents at Atchison, Kansas to produce a superior grade of vital gluten used for food enrichment.



Drum Dryers produce 210,000 pounds of flaked cereal for Beech Nut's Rochester, New York plant. They work a 140-hour week, take just 4-hours to clean.

Buflovak engineers equipment to cut food processing costs

Pictured here is equipment that upgrades food products, speeds food processing. These installations are the result of close teamwork between processor and Buflovak engineers.

Backed by a complete line of dryers, evaporators, flakers, autoclaves, and kettles, Buflovak impartially recommends the right equipment to meet your needs. Whenever product research indicates the need for custom units, Buflovak has the design know-how and production facilities to follow through.

See how this technical resource and experience can pay off on your next job. Start by investigating your problem at Buflovak's completely equipped Customer Service Laboratory. For details, write for Bulletin 381.

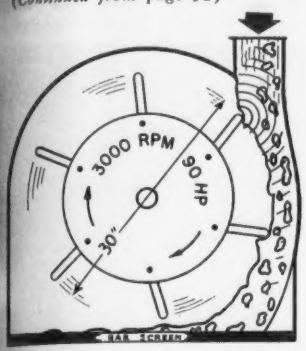
BLAW-KNOX

BLAW-KNOX COMPANY

Buflovak Equipment Division

1559 Fillmore Avenue, Buffalo 11, New York

(Continued from page 52)



While diagram for unit used in vegetable process is not available, it is probably similar to impulse extractor previously built for rendering, which is shown here. Unit contains six banks of hammers made up of bars having a ¾" by ¾" cross section and a blunt, rounded tip.

Water, conditioning material to be extracted enters at top and is struck 300 times a second by these hammers, creating a tremendous impact which causes shock waves.

Shock waves are transmitted throughout the water stream in all directions to rupture cells containing protein and oil. Discharge from the impulse extractor is through a graduated bar screen at the bottom with openings varying from ¼" on the feed side to 2" on the other.

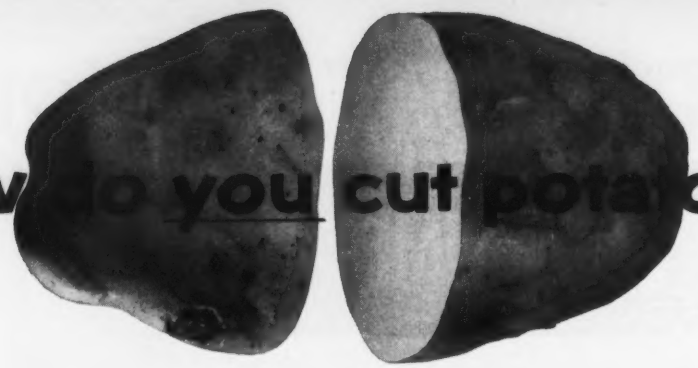
while the oil combines with them.

Insoluble carbohydrates and fibres, present in vegetable materials, are then separated from the protein and oil by a continuous centrifugation process, leaving the protein-oil combination still in solution.

Neutralizing this solution, the protein and oil combination becomes a slurry easily separated from water. Slurry is then dried and split into its oil and protein components.

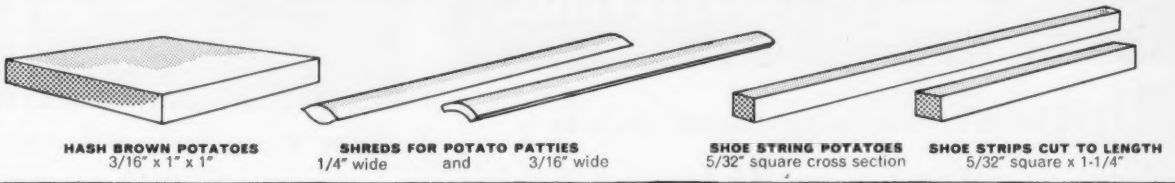
(The Chayen Process for impulse extraction of protein and oil from vegetable material is a development of British Glues & Chemicals, Ltd., Imperial House, 15 Kingsway,

For more information on product at left, circle 5687 . . . see information request blank opposite last page.

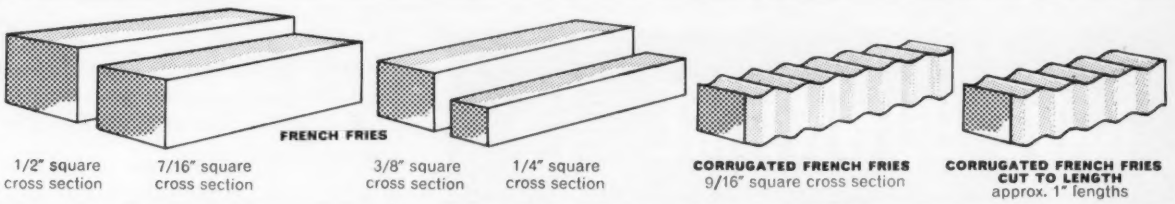


how do you cut potatoes ?

New potato shapes, created to *revitalize* lagging appetites, are making important sales news all along the nation's shopping fronts. Urschel machines can cut practically any shape you want. They feature precision uniformity, highest yields, lowest product loss, unusually high capacities, low maintenance, and complete product protection (product contacts only stainless steel or special non-corroding metal surfaces).

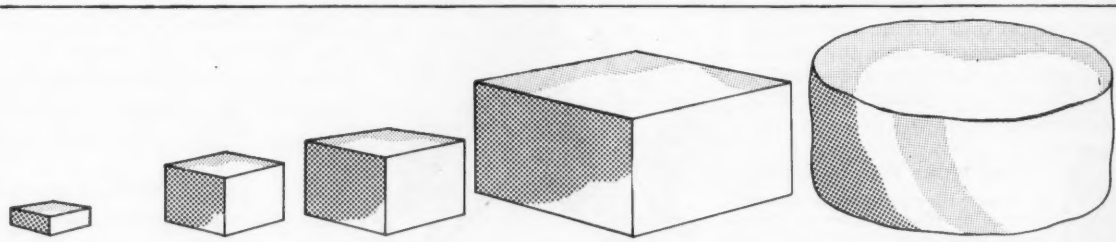


HASH BROWN POTATOES 3/16" x 1" x 1"
SHREDS FOR POTATO PATTIES 1/4" wide and 3/16" wide
SHOE STRING POTATOES 5/32" square cross section
SHOE STRIPS CUT TO LENGTH 5/32" square x 1-1/4"



FRENCH FRIES
1/2" square cross section
7/16" square cross section
3/8" square cross section
1/4" square cross section
CORRUGATED FRENCH FRIES 9/16" square cross section
CORRUGATED FRENCH FRIES CUT TO LENGTH approx. 1" lengths

AMERICAN FRIES 3/16" thickness
GERMAN POTATO SALAD 3/16" thickness
FLAT POTATO CHIPS 1/16" thickness
CORRUGATED POTATO CHIPS 1/16" thickness



POTATO PATTY PIECES FROM FRENCH FRY SCRAP 1/8" x 1/4" x 1/4"
SOUP CUTS 3/8" cubes
POTATO SALAD 1/2" cubes
STEW CUTS 3/4" x 1" x 1"
PRE-SLICING FOR POTATO FLAKES 3/4" thickness

Consult with our cutting specialists

URSCHEL LABORATORIES INC.
VALPARAISO, INDIANA

PRECISION HIGH-SPEED FOOD CUTTING EQUIPMENT

Designers and manufacturers of precision, high speed cutting equipment for food products.

5688 on Reader Service Slip

Clipper *machine-laced joints*
are installed faster

SAVE DOWNTIME

Clipper *machine-laced joints*
are more durable

SAVE DOWNTIME

Clipper *machine-laced joints*
are more flexible

SAVE DOWNTIME

Clipper Belt Hooks and Lacers make belt joints as strong, smooth and flexible as the belt itself. Exerting pressures up to 45,000 pounds, Clipper Belt Lacers imbed hooks firmly and flush with the surfaces of the belt, making strong, smooth joints that give longer life and save downtime. Clipper Belt Lacers lace belts up to 12 inches wide in one operation, speeding belt replacement and installation and saving downtime. Each hook is separate from the others giving flexibility not possible with other methods . . . saving belt wear and downtime.

FOR MORE INFORMATION

Detailed product information and case history examples of Clipper machine-lacing benefits are contained in Bulletin No. 157. Send for your free copy today.

Ask your Industrial Distributor for Clipper Products

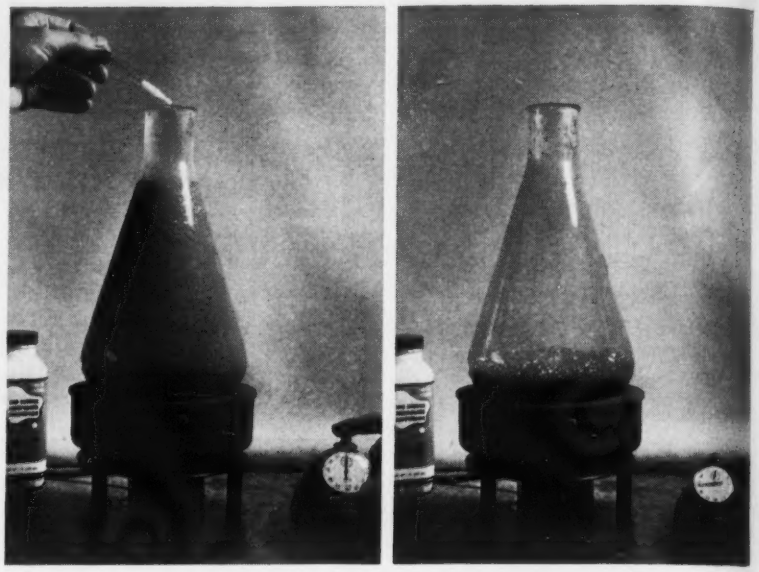
Clipper BELT LACER COMPANY

972 Front Ave., N. W. Grand Rapids 2, Michigan

5689 on Reader Service Slip.

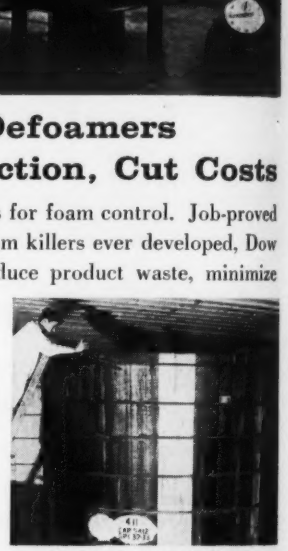
SILICONE NEWS from Dow Corning

Stop Foam Fast



Dow Corning Silicone Defoamers Increase Production, Cut Costs

You can't beat Dow Corning silicone defoamers for foam control. Job-proved to be the fastest, most efficient and effective foam killers ever developed, Dow Corning defoamers speed processing time, reduce product waste, minimize maintenance and eliminate the chance of boil-overs and fire hazards.

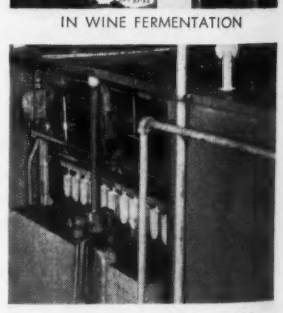


IN WINE FERMENTATION

Easy-to-use Dow Corning silicone defoamers eliminate troublesome foam in the processing and packaging of foods, beverages, syrups and antibiotics. Highly effective at low concentrations, they knock down a mountain of foam and minimize recurrence, without contaminating the product.

Odorless, tasteless and physiologically harmless, Dow Corning Antifoam A may be used in nonstandard foods at concentrations up to 10 ppm; water-dilutable Antifoam AF Emulsion may be used at concentrations to 34 ppm.

Write for a FREE SAMPLE giving an indication of your foaming problem and whether it's in an aqueous or oil system. Address Dept. 5723.



IN PROCESSING FROZEN BARS

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.

5690 on Reader Service Slip.

When ice and packed snow make streets and sidewalks slippery—handicap man and truck—try

Formulated melting compounds

Characteristics built into chemical-type melting compounds make it possible to specify a product for virtually every ice and snow-removal problem.

Pellets for hand or machine distribution can be used to control small areas. Pellets are also often used with sand or grit for large-area control. Aerated forms of the compound are sometimes processed to provide greater bulk for economy in mechanical spreading. Flake forms are manufactured to adhere to inclined surfaces such as ramps.

Both sodium and calcium chlorides have been important salts used in the control of melting. These compounds act to depress the freezing point of water.

A second type of chemical compound is used which acts on a principle of exothermic action (internal heat generation). These compounds often contain additives to make them noncorrosive to metals.

Other additives are sometimes employed to prevent the compound from caking or to improve its spreading characteristics.

Among the products available to maintenance departments are:

Ice-Rem — Exothermic action compound, available as small pellets which can be spread by hand. Contains Speconite, a rust inhibitor. Manufacturer recommends for use in small areas.

Ice-Rem Super — A large scale industrial melting compound for use on parking lots, driveways, etc. Chemically similar to previous compound, but supplied as flat thin chips. Crystals are aerated to provide 40 per cent greater bulk than pellets. Intended for mechanical spreaders. White crystal leaves no residue, will not discolor carpets, floors, tiles. Additives Speconite and Eo are used to inhibit corrosion. Supplied in 100, 200, and 300-pound fiber drums or in 80-pound bags (ton lots only).

Ice-Rem CF — Chloride free nonhygroscopic formula, 99.99 per cent active, yet noncorrosive to metals. Does not deteriorate with storage. Melting action is attained by freezing point depression. Speconite, a corrosion-inhibiting agent is added. Crystals are prismoid to provide abrasive action. One pound per 120 square feet is recommended for average surfaces. Compound is packed in 100, 200, 300, and 500-pound fiber drums and is available bulk in hopper cars or dump truck.

(Foregoing products are manufactured by Speco Inc., 7803 Associate Ave., Cleveland 9, Ohio.)
5691 on Reader Service Slip.

Nacor Melts-It — Chemical melting agent recommended for addition to abrasives for ice control. Available as pellets slightly larger than BB shot. Melts by exothermic action with 32 times the thawing capacity of salt at 5°F. NA-23 corrosion inhibitor added. Available in 100, 300, and 500-pound fiber drums. Ton lots packed in 80-pound bags.

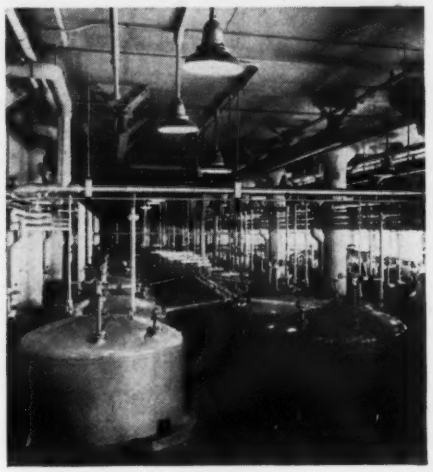
(National Asphalt Corporation, Bulkley Building, Cleveland 15, Ohio.)
5692 on Reader Service Slip.

Melt NC — Formula is free of calcium and chlorides. Will not damage cement, concrete, asphalt, grass, or vegetation by chemical activity. Ingredients are 99.99 per cent active. Sup-

(*Continued on next page*)

FLUIDICS

is a Pfaudler Permutit program providing
the know-how
the equipment
and the experience
for solving problems involving fluids



FLUIDICS covers such varied phases of fluid handling and control as

blending
evaporation
distillation
drying
filling
heat transfer
storing
centrifuging
agitation
water treatment
corrosioneering
waste treatment
metering

Whenever you have a fluid-handling problem, look to this Pfaudler Permutit FLUIDICS program for the best solution.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS . . .
the science of fluid processes

FLUIDICS AT WORK

How Glasteel protects delicate flavors

This room is the resting place of various whiskeys and wines before they go into bottles under the stern eye of the Ontario Liquor Control Board. The equipment used can have a critical effect on the flavor of the whiskeys and wines.

Metals can change a product's flavor. Glass cannot. Glass is inert. That's why the forty tanks in this room are Pfaudler Glasteel (glass inside, steel outside).

Absolute cleanliness is a must in this equipment. When a tank goes from holding whiskey to holding wine, for example, there must be no residue left from the first batch to affect the flavor or make-up of the second.

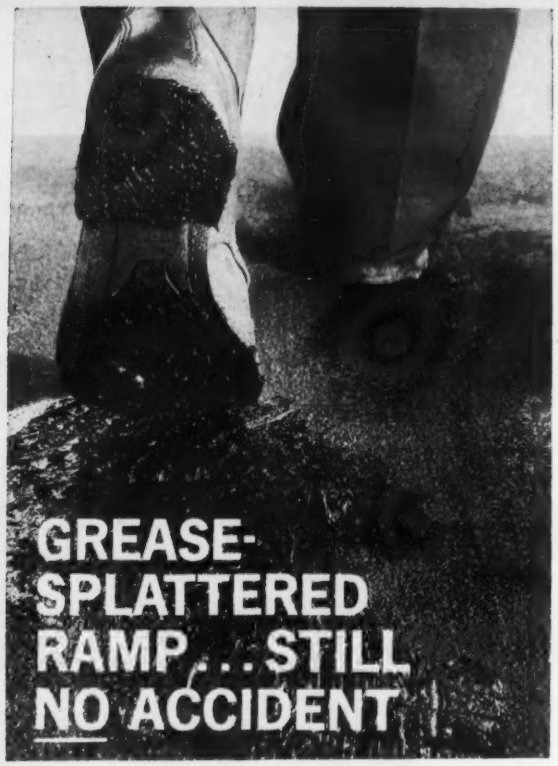
Practically nothing clings to glass. What does cling washes away easily. That's another reason why all forty tanks in this room are Pfaudler Glasteel.

That's our story on all food storage. You want a tank with no flavor of its own. You want a tank that cleans easily. Just one material does both economically and consistently—Pfaudler Glasteel.

All the details you might want to know are in Bulletin No. 968, which is yours for the asking. Write to our Pfaudler Division, Dept. FP-119, Rochester 3, New York.

75 YEARS CREATING FOR TOMORROW Pfaudler

5693 on Reader Service Slip.



Get Lasting Protection Against Slipping With Alcoa Abrasive Tread Plate

Injury no longer travels this ramp. Keeping it at bay is Alcoa® Aluminum Abrasive Tread Plate with its hard, abrasive surface that remains slip-proof even when wet, oily or greasy. It is made with tough particles of fused aluminum oxide and is the only nonskid floor plate that gives all the advantages of lightweight, corrosion-resistant aluminum. Because wear only serves to renew the surface by uncovering abrasive particles imbedded below the original level, it offers lasting protection against slipping accidents that can injure skilled workers, cause expensive production breakdowns and increase insurance rates.

Find out how you can reduce accidents by installing easy-to-handle Alcoa Abrasive Tread Plate in aisles, ramps, catwalks and other areas where slippery deposits accumulate. For more information, check the coupon below, write Aluminum Company of America, 1688-L Alcoa Building, Pittsburgh 19, Pa., or call your nearest Alcoa Distributor.

ALCOA ALUMINUM

Your Guide to the Best in Aluminum Value

For Exciting Drama Watch "Alcoa Theatre," Alternate Mondays, NBC-TV, and "Alcoa Presents," Every Tuesday, ABC-TV

Aluminum Company of America
1688-L Alcoa Building, Pittsburgh 19, Pa.

Show me how Alcoa Abrasive Tread Plate prevents slipping. Please send a FREE sample--also application, design and fabricating data.

NAME AND TITLE_____

ADDRESS_____

CITY AND STATE_____

5694 on Reader Service Slip.

sanitation

(*Continued from preceding page*)

plied as granules, which are non-hygroscopic. Recommended for use where corrosive effect on metal must be minimized.

(Available from the Chem Industrial Co., 3784 Ridge Road, Brooklyn 9, Ohio.)
5695 on Reader Service Slip.

X-73 — Pellets containing the additive phosite. Manufacturer recommends 100 pounds to clear 5-8000 square feet of surface depending upon temperature and depth of snow and ice. Available in 100, and 300-pound drums. Quantities of 1000 or more pounds packed in 80-pound bags.

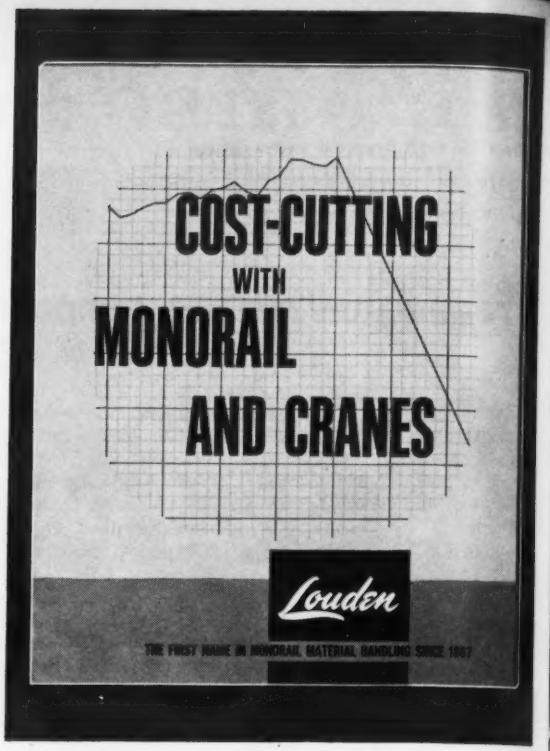
(X-73 is available from the Monroe Co., Inc., 10707 Quebec Avenue, Cleveland 6, Ohio.)
5696 on Reader Service Slip.

SNO-GO — Small white pellets acting on exothermic chemical action (99 per cent active). Laboratory tests show the product to be 30 times faster than salt and 10 times faster than flake calcium chloride. Keeps melted solution in liquid state until evaporation or dilution beyond potency. Applied by hand or mechanical spreader. Recommended distribution is ¼-pound per square yard for normal conditions and ½-pound per square yard for thick ice. Harmless to rubber, cured concrete, grass, vegetation, metals, etc., and leaves no insoluble residue. Product weighs 58 pounds per cubic foot. A solution of 3.31 pounds in a gallon of water (sp. gr. 1.293) lowers the freezing point of the water to −60°F.

(Available in 500, 315, 215, and 100-pound drums and 100 or 80-pound polyethylene bags from the Garland Co., 3748 E. 91st Street, Cleveland 5, Ohio.)
5697 on Reader Service Slip.

For more information

on Sanitation and Maintenance developments, see New Industrial listings, page 113.



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A Subsidiary of Mechanical Handling Systems Inc.

Louden

MONORAIL & CRANES

SINCE 1867 . . . THE FIRST NAME IN MATERIALS HANDLING

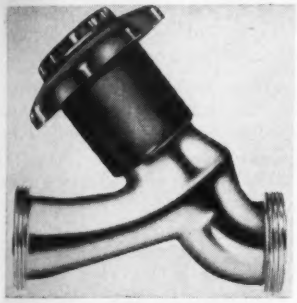
5698 on Reader Service Slip.

Dripless valve is seatless, sanitary

Interchangeable boot replaces conventional disk-seat, can withstand from −60 to 300 F

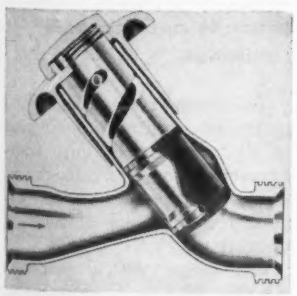
Line of valves was designed for dairy, beverage or other food-product uses.

Closure-mechanism eliminates conventional threaded stem-with-disk that is screwed down on seat. Disk is substituted by boot, mounted on quick acting cam for fast opening or closing (see photos below).



Valve can be installed in position shown above, or on side (90° right or left from position above), in horizontal lines. For vertical lines, recommended installation is with handle slanting upward

Because there is no seat, valve is self-draining, has full



Boot, which makes dripless seal, is manufactured from synthetic flexible material which is non-toxic, odorless and tasteless. It is the only part of valve, except for body, that comes in contact with fluid

(*Continued on next page*)

The big advantages of Taper-Lock mounting are now available for practically all of your sprocket installations. Below is listed the new wide range of types and sizes offered by Dodge!

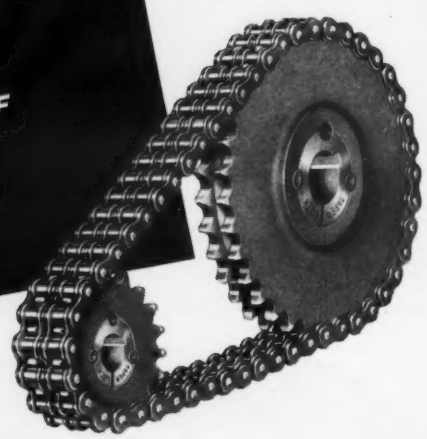
This important expansion of the Dodge line is the result of the enormous popularity of the Taper-Lock idea. Taper-Lock Sprockets are *modern*. Industry likes them because they go straight from shelf to shaft without machining—saving time. They are "easy on—easy off"—saving work. Their bushings can be re-used, not only in replacement sprockets, but in sprockets of different sizes and also in Taper-Lock Sheaves, Couplings, Conveyor Pulleys. Taper-Lock saves inventory—and money!

Dodge Taper-Lock Sprockets and Dodge Roller Chain are available through your local Dodge Distributor. Call him. Or write us for bulletin.

TAPER-LOCK®

ROLLER CHAIN DRIVES ARE NOW AVAILABLE IN A NEW WIDE RANGE OF TYPES AND SIZES

No Reboring!
No Keyseating!
No Waiting!



DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER — your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

- ***DOUBLE PITCH CHAIN and SPROCKETS***
  Transmission Series (No. 2040 to 2080) and Conveyor Series (No. 2040 to 2100). Sprockets to 112 teeth—including, for the first time, stock sprockets of 17, 19, 21, 23, 25 and 35 teeth *made especially for double pitch chain*. Introduced by Dodge, these sprockets are designed for even distribution of tooth engagement and absolute accuracy of mesh. Wear is reduced by half. Life of chain and sprocket is doubled!
- ***PLATE SPROCKETS***
  Steel Plate, Type A. No. 35 to 120. Mandrel bore, bored-to-size or Taper-Lock.
- ***SINGLE STRAND CHAIN and SPROCKETS***
  No. 35 to 160. Sprockets to 112 teeth.
- ***DOUBLE STRAND CHAIN and SPROCKETS***
  No. 35-2 to 80-2. Sprockets to 112 teeth.
- ***STANDARD ATTACHMENTS***

ALL TO ASA STANDARDS

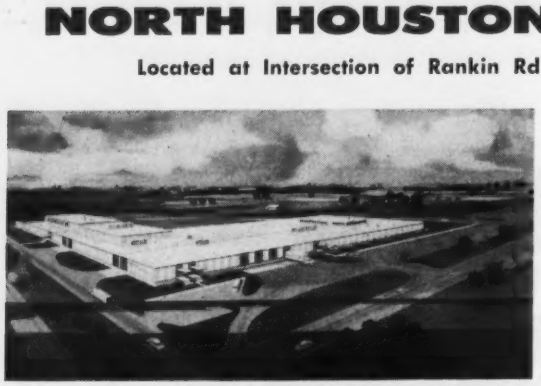
DODGE MANUFACTURING CORPORATION, 2400 Union Street, Mishawaka, Indiana

5699 on Reader Service Slip.

HOUSTON'S FINEST INDUSTRIAL SUBDIVISION

NORTH HOUSTON INDUSTRIES, INC.

Located at Intersection of Rankin Rd. & Hardy St. East of U.S. Highway 75



Architect's drawing of **Armour & Company** meat processing and distribution facility to be built in North Houston Industries.

Here's what a plant site in North Houston Industries offers you:

- 36-foot wide paved streets — 100-foot rights of way.
- Convenient on-site trackage.
- On-site pre-treating sewerage facilities tied in with Houston's municipal system.
- Planned restrictions protect your investment.
- Unlimited utilities for all needs including natural gas.
- Conveniently located to all types transportation.

N

NHI

If you are seeking a plant site you cannot ignore Houston — heart of the fabulous Southwest. If you locate in Houston you cannot ignore Houston's most modern and complete industrial subdivision.

NORTH HOUSTON INDUSTRIES, INC.

General Offices 720 Bank of Commerce Bldg. • CApitol 8-6311 • Houston, Texas

Information and Sales Center — Archer Romero & Company
1906 South Coast Building • CApitol 7-4201 • Houston, Texas

Inquiries from industries and industrial realtors invited

5700 on Reader Service Slip.

SPEAS APPLE PECTINS

Standard of Quality for 30 years

BETTER JAMS Jellies and Confections Because...

1. *Wide pH Range*
2. *Uniform Strength*
3. *Neutral in color and flavor — blends naturally with more different fruits than any other pectin*
4. *Makes jams & jellies with an even, smooth texture (never grainy) and improved spreadability*

- **NUTRL-JEL** Regular and Slow Set. } For Preserves, Jams, Jellies and Marmalades
- **CONFECTO-JEL** For Jellied Candies — Ready to use.

For full information, technical advice, and formulas write Dept. FP-11

Plants in Apple Regions From Coast to Coast Assure Dependable Supply

SPEAS COMPANY, GENERAL OFFICES, KANSAS CITY 20, MISSOURI

5701 on Reader Service Slip.

(*Continued from preceding page*)

through-flow with minimum pressure drop.

Boot is easily removed. It is furnished in different materials to meet various service requirements such as milk or fruit and vegetable juices.

No lubrication, other than passing fluid, is required in most cases. Valves are quickly and easily disassembled for cleaning.

Body of valve is fabricated from flat, polished SS sheets, thereby eliminating porosity. "Molectric" treatment is said to increase its resistance to corrosion.

Standard poppet and knob are molded of material highly resistant to heat and breakage.

Valve is light-weight, yet strong. It can therefore be used with pyrex tubing since no special hangers or mounting devices are necessary.

(Valve is a product of Stehlin Corporation, 1724 S. Los Angeles St., Los Angeles 15, California.)

5702 on Reader Service Slip.

Disposable paper towels promote and maintain sanitation

To promote cleanliness and maintain sanitary conditions at Slater Food Service Management Plant in Philadelphia, disposable paper towels are used for a variety of cleaning operations.

One area which demands special attention because of nature of operations, is the meat cutting and preparation department shown above.

Highly absorbent lint-free paper towels are kept handy in open-end cardboard sleeve

(*Continued on page 62*)

Plants, Companies, Personalities

The Hubinger Company

Keokuk, Iowa, has appointed George C. Youland supervisor of applications development and technical service for food applications of starches and corn syrups. His experience includes one yr as a processed foods inspector for USDA, and seven yr as a supervisor of process and product research for Green Giant Company, Le Sueur, Minn.

California & Hawaiian Sugar Refining Corp.

San Francisco, has appointed William G. Watt, a 24-yr employee of C and H, manager of purchasing and packaging. He will be responsible for the company's program of package development (in addition to directing purchasing functions) and will serve as secretary to the management Research and Development Committee on matters pertaining to packaging.

University of California

College of Agriculture, announces appointment as food technologist of Dr. A. W. Brant, former chief of the Poultry Research Branch of the USDA at Beltsville, Md. A widely known authority on quality of eggs and poultry meat, his work will be conducted at the University's Davis campus.

American Meat Institute Foundation

Chicago, has promoted Dr. Arthur J. Siedler to chief of its Division of Biochemistry and Nutrition.

Beck Vanilla Products Company

East St. Louis, Ill., announces appointment as director of research and product development of Dr. Paul H. Tracy, retired head of the Department of Dairy Technology, University of Illinois. Dr. Tracy will maintain a research and service laboratory adjacent to his residence at Deland, Fla., and will be available for flavor problem consultation by the food industry.

(*More on page 79*)

this is

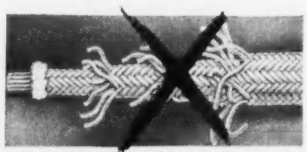
Garlock Lattice-Braid*...

*Registered Trademark

... introduced to the packing industry by Garlock and produced on special braiding machines by the most experienced operators. Only Garlock can give you Lattice-Braid.

Lattice-Braid is the greatest improvement ever made in braided packing. In its construction, each strand passes diagonally through the body of the packing at a 45° angle. This through-and-through braiding makes a completely unified structure of greater strength. Ordinary braided packings become worthless once the single outer strands are worn through. On Lattice-Braid, there is no single outer braid; thus, it holds together far beyond the limits of other packings . . . permits rings to be formed from coil without distortion.

COMPARE IT with square or flax braid. Each strand merely passes over and under other strands running in the opposite direction. No strands pass entirely through the packing; there is no unified structure.



COMPARE IT with round or braid-over-braid. This packing is built up to the required size by braiding one or more covers around a center core. Each cover is entirely separate from the core and other covers; there is no structural bond.

Enjoy longer packing life and lower maintenance costs. Consult your nearest Garlock representative about the advantages of Lattice-Braid packings . . . there's one for every service. Call him, or write for Folder AD-131.

THE GARLOCK PACKING COMPANY, Palmyra, N. Y.

For prompt service, contact one of our 26 sales offices and warehouses throughout the U. S. and Canada.

GARLOCK

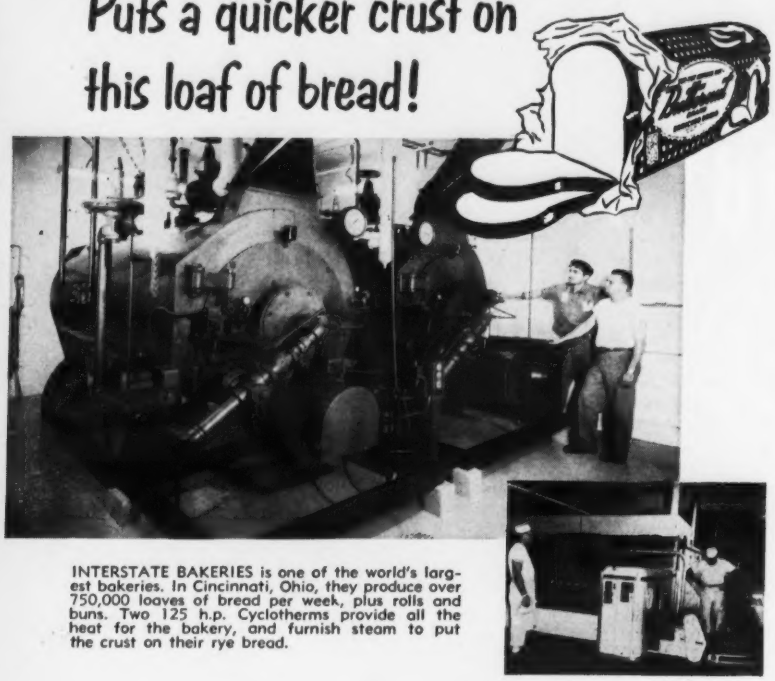
Packings, Gaskets, Oil Seals, Mechanical Seals, Molded and Extruded Rubber, Plastic Products

Canadian Div.—The Garlock Packing Co. of Canada Ltd.
Plastics Div.—United States Gasket Co.

5703 on Reader Service Slip.

CYCLOTHERM

Puts a quicker crust on this loaf of bread!



INTERSTATE BAKERIES is one of the world's largest bakeries. In Cincinnati, Ohio, they produce over 750,000 loaves of bread per week, plus rolls and buns. Two 125 h.p. Cyclotherms provide all the heat for the bakery, and furnish steam to put the crust on their rye bread.

. . . all the steam needed, at lower cost, in less space!

Interstate Bakeries, like many other processing plants, have found that Cyclotherm Package Steam Generators provide the capacity and flexibility to handle *all* their steam needs. Only one of the two 125 h. p. Cyclotherms is commonly in use . . . operating at peak efficiency. The other comes into use under peak demands . . . such as when providing steam to crust the bakeries' rye bread.

Because of compact design . . . Cyclotherms save up to 1/3 the space required by conventional boilers . . . the two 125 h.p. package generators fit easily into existing room.

Cyclotherm begins saving money even *before* they go to work. They require no expensive foundations or stacks. Only five simple connections, and installation is complete.

Interstate Bakeries report that maintenance of their two Cyclotherms is practically nothing. The two steam generators are in constant service except for 15 minutes each day when the boilers are blown down and water treatment is checked.

Cyclotherm Package Steam Generators are available with oil and/or gas burners to permit you to take advantage of the best fuel prices in your area. In addition, the patented principle of Cyclonic Combustion with Perfect Diffusion Burning consumes *all* the fuel . . . provides a minimum of 80% efficiency from only two passes.

YEARS AHEAD IN STEAM & HOT WATER GENERATION
CYCLOTHERM
STEAM AND HOT WATER GENERATORS

A Division of National-U.S. Radiator Corp.
61 E. First St., Oswego, N. Y.

Clip to Your Letterhead

61

Please send me complete information on Cyclotherm Package Steam Generators used in Bakeries and Food Processing Plants.

5704 on Reader Service Slip.

maintenance

(*Continued from page 60*)

containers on meat counters. Two-ply paper toweling incorporates necessary strength and absorbency for soaking up meat juices quickly and efficiently. They are also used for cleaning knives, cleavers, scrapers and grinders.

Used towels are disposed of in nearby waste receptacles and removed along with other waste daily.

(Paper towels are a product of Scott Paper Co., Chester, Pa.) 5705 on Reader Service Slip.

Low-temp insulation has high thermal efficiency

K-factor of 0.096 permits insulation thickness to be 50 per cent less at 0 F

Uses: For insulating pipe lines in continuous service between −300 F and 250 F. For intermittent service or steam-out, upper temperature range extends to 275 F.

Foam insulation is specifically designed for low temperature applications where its low thermal conductivity can be used most advantageously.

Features: At a mean temperature of 0 F it has a K-factor of only 0.096 Btu per sq ft, hr, degree F — less than one-half that of any other known industrial insulation suitable for low temperature use.

Comparative figures are shown in the following table:

Comparison of Thermal Conductivities of Low Temperature Insulations

Material	K-Factor Mean Temperature 0 F
B-H Rigid Foam	0.096
Foamed Polystyrene	0.22
Cellular Glass	0.35
Cork Board, 7-lb Density	0.24

Material is lightweight (3 lb/cu ft), non-irritating, non-abrasive and non-toxic.

Description: Polyurethane foam is pre-molded. It is a

What's News in Milling?

OLD FASHIONED STONE GRINDING GETS JET AGE TREATMENT

Old fashioned buhr stone milling is justly famed for retention of true flavors, preservation of esters and essences and production of fine textures. But it is slow, ponderous and needlessly expensive. Now the Morehouse principle of small, high-speed stone grinding retains all those advantages and in addition multiplies production rates in a fraction of the space and at much lower cost, on a wide variety of products.

TAKE MUSTARD, FOR INSTANCE

The Morehouse Mill was originally designed for processing mustard. Sold throughout the world some of the original mills are still in operation. Many more are from 15 to 20 years old, yet work every day and their owners expect many more years of trouble-free service.

Continuous improvements have been made until today the new Morehouse Super Series Mills are capable of producing up to 300 or more gallons of speckless mustard per hour.

Equally impressive are production figures for many other food products — pepper sauce, hundreds of gals. per hour; peanut butter, up to 4000 lbs. per hour; chocolate coatings, 500% increase; candy creme fillings, 700 to 1000 lbs. per hour, to name but a few. If your product requires grinding, dispersing, disintegrating, emulsifying or homogenizing, there is a Morehouse Mill that will do it better, in less time, at less cost than any other machine on the market.

Let us prove it in your plant — at our risk!

Write us today about your problem

MOREHOUSE COWLES

MOREHOUSE-COWLES, INC.
1150 San Fernando Road
Los Angeles 65, Calif.

Representatives in Principal Cities
Convenient Lease and Time-Payment Plans

MOREHOUSE-COWLES, INC.
1150 San Fernando Road, Los Angeles 65, Calif.
Please send me information on use of Morehouse Mills in processing (product) .....

Name _____ Title _____
Firm _____
Address _____
City _____ Zone _____ State _____

5938

5706 on Reader Service Slip.

mass of closed cells which contain entrapped inert gas. This makes material dimensionally stable, non-capillary, and of low permeability.

Foam is strong: 50 psi compressive strength at 75 F, 103 psi flexural strength, and 60 psi tensile strength. It is resistant to breakage, thermal and mechanical shock.

Insulation can be cut with knife and applied to piping with steel bands or tie-wire. Joints are sealed with low temperature mastics.

All standard IPS sizes, from ½ to 12 in. diameter, are available. Thicknesses range from ¾ to 2½ in. in one-half inch increments. Half sections are 3 ft long.

(B-H Rigid Foam Pipe Insulation is produced by the Baldwin-Hill Company, 500 Breunig Ave., Trenton, N.J.) 5707 on Reader Service Slip.

Ready-to-lay prefab flooring

Ready-made sheets of 2 ft by 3 ft can be laid like tile, are suitable for indoor applications on new or old floors.

Sanitary, odorless material is made of asphalt-treated felt with a core of blended asphalts and interwoven fibers. It can be applied over concrete, wood or metal.

Further details and method of installation are given in 2-page data-sheet.

("Nu-Floor" literature is available from The Monroe Company, Inc., 10703 Quebec Ave., Cleveland 6, Ohio.) 5708 on Reader Service Slip.

Couplings with 4-way flexure

Flexible cushion couplings are able to absorb angular and parallel misalignment, take end-float and torsional vibration.

Coupling and dry-fluid drives are featured in 8-page bulletin.

Also presented are illustrated descriptions of taper-

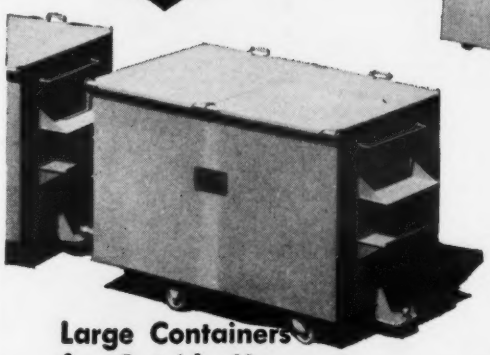
(*Continued on next page*)

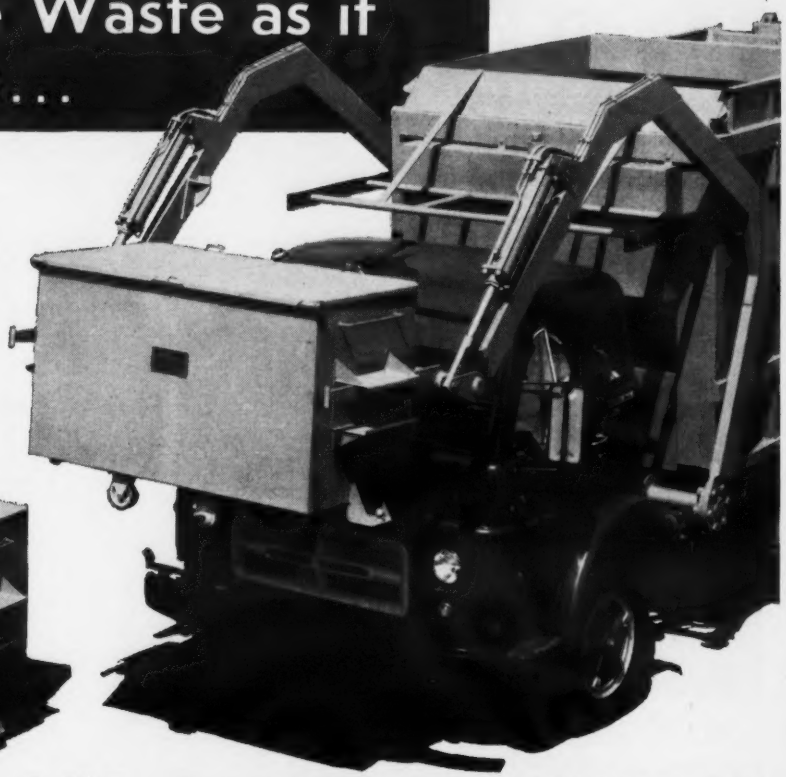
cut disposal costs by two-thirds...

Containerize Waste as it Accumulates...

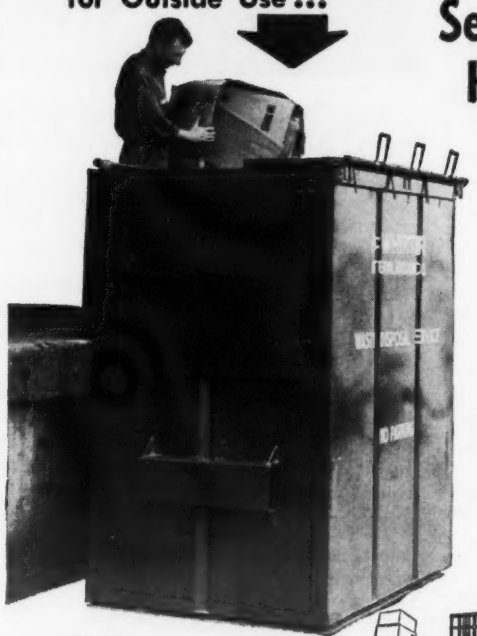
Structures Shown are Covered by U.S. Letters Patent No. 2,900,096 Other Patents Pending

Small Tracking Containers for Indoor Use...





Large Containers for Outside Use...



Self-Loading DEMPSTER-DUMPMASTER Handles 6 Sizes of Containers...

If you're using boxes, bins, cans or carts to handle or store big-volume waste and refuse, you can reduce costs by more than two-thirds with the new DEMPSTER-DUMPMASTER System of waste storage and collection.

One Dumpmaster serves any number of detachable metal containers placed at waste accumulation points. Making its rounds, the Dumpmaster picks up each container, in turn, empties the contents into its packer body and compresses the material to a fraction of its former volume assuring big pay loads on every trip to the disposal area.

The DEMPSTER-DUMPMASTER is economical! One man operation. It's safe! Clearance lifting arms never pass the cab windows, can't injure operator. Containers can be used indoors or outdoors, on ground, below grade or on a dock.

This system is also available on a monthly fee basis through a nearby DEMPSTER-DUMPMASTER equipped private hauler, (name furnished on request).

WRITE TODAY FOR FREE BROCHURE

Mfd. By DEMPSTER BROTHERS Inc.

DEMPSTER DUMPSTER® SYSTEMS

Dept. FP-11 DEMPSTER BROTHERS, Knoxville 17, Tennessee

5709 on Reader Service Slip.

There's Wear to Spare in...

LA PORTE
FLEXIBLE STEEL
CONVEYOR BELTS

THE strength and durability of La Porte Galvanized Steel Conveyor Belts pay off in improved performance and lower maintenance cost. The flexible open-mesh design assures a positive drive on the La Porte Sprocket, allows the free circulation of air and liquids around products in process, also makes these belts easy to shorten, lengthen, repair, or sterilize without removal from the sprocket. In addition, the hard galvanized surface resists oils, acids, detergents, grease and corrosion.

If you freeze, can, dehydrate, pickle, package, store or ship food, it will pay you to use La Porte Belts. Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon for illustrated literature and prices.

MAIL COUPON TODAY
LA PORTE
MAT & MFG. CO.

Box 124 Dept. A
La Porte, Indiana

Please send free literature on your Conveyor Belt.

NAME_____

ADDRESS_____

CITY_____ STATE_____

5710 on Reader Service Slip.

maintenance

(*Continued from preceding page*)

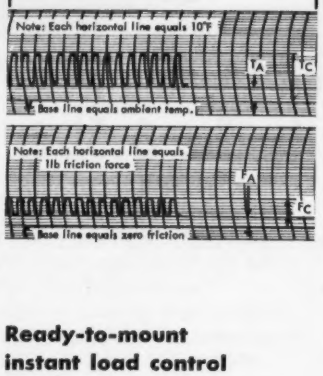
lock products such as steel-conveyor pulleys, roller-chain drives, shaft couplings and V-belt drives.

Other products included in bulletin are pillow blocks with tapered roller or spherical bearings, ball bearings, take-ups, friction clutches and torque-arm speed reducers.

("Power Transmission Machinery," Bulletin A-706, may be obtained by writing Dodge Manufacturing Corporation, Mishawaka, Ind.)
5711 on Reader Service Slip.

Charts have lines

On page 113 of the October issue, in the article on oilless bearings, the charts from the bearing tester did not show horizontal lines that represent temperature. The charts are correctly shown below.



Ready-to-mount instant load control

Electro-sheave is a combination V-belt sheave and electro-magnetic clutch. It can be attached to any standard NEMA motor-shaft on motors ranging from 1 to 25 hp.

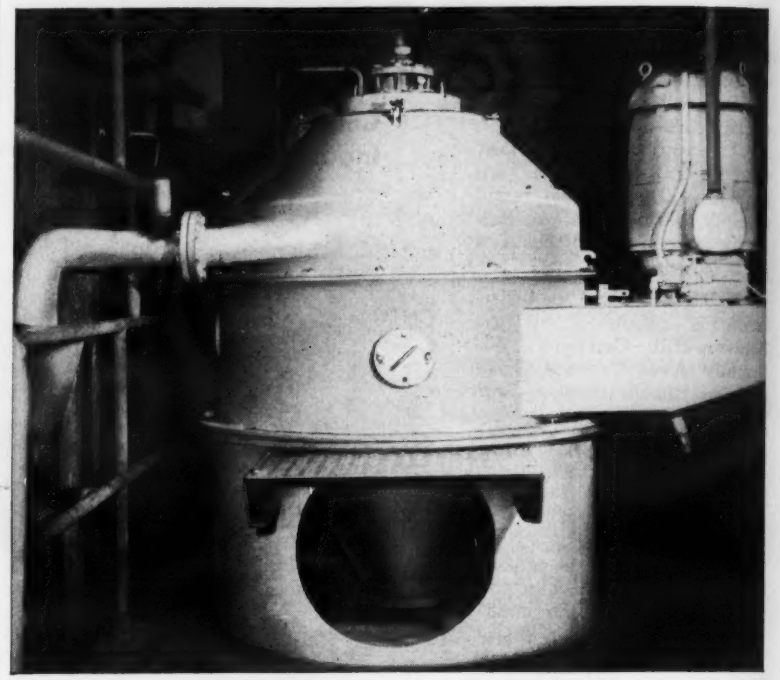
Ten-page, colored brochure illustrates and describes in detail how this mechanism works.

Special features such as stepless torque modulation, as well as selection charts and dimensions are included.

("Electro-Sheave," brochure WEB P-52, is available from Warner Electric Brake & Clutch Company, Beloit, Wis.)
5712 on Reader Service Slip.

Western Condensing Company gets Dry, Clean Lactose Crystals at Lower Processing Cost with the

MERCONE SCREENING CENTRIFUGE



A Mercone screening centrifuge is giving Western Condensing Company of Appleton, Wisc., more efficient separation of lactose crystals from cheese whey. Here's why:

Improved Product—Lactose crystals discharged from the Mercone are exceptionally clean and dry. The high quality of the separated product reduces the amount of refining chemicals required.

Maximum Recovery of Crystals—A DorrClone liquid cyclone used with the Mercone unit separates out fine crystals, recycles them through the Mercone. This Mercone-DorrClone combination gives maximum recovery of lactose.

Lower Operating and Maintenance Costs—The Mercone screening centrifuge occupies half the floor area of previous separation machinery, and has considerably greater capacity. Western Condensing's maintenance costs for the Mercone are less than those for the previous installation.

A compact, completely enclosed sanitary unit, the Mercone screening centrifuge is particularly well adapted to food processing. For information, just drop a line to Dorr-Oliver Incorporated, Stamford, Connecticut.

Mercone and DorrClone are Trademarks of Dorr-Oliver Inc., Reg. U.S. Pat. Off.

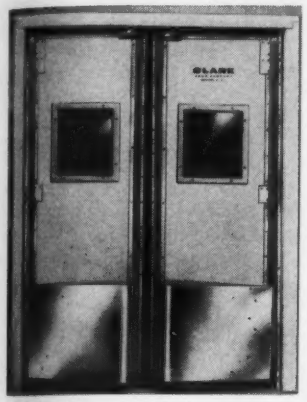
DORR-OLIVER
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

5713 on Reader Service Slip.

Self-closing, shock-absorber door

Uses: For sealing a doorway against air or noise through which fork lift trucks pass.

Features: Urethane-filled bumpers on door—see photo—absorb shock of impact.



Trucks never touch door proper

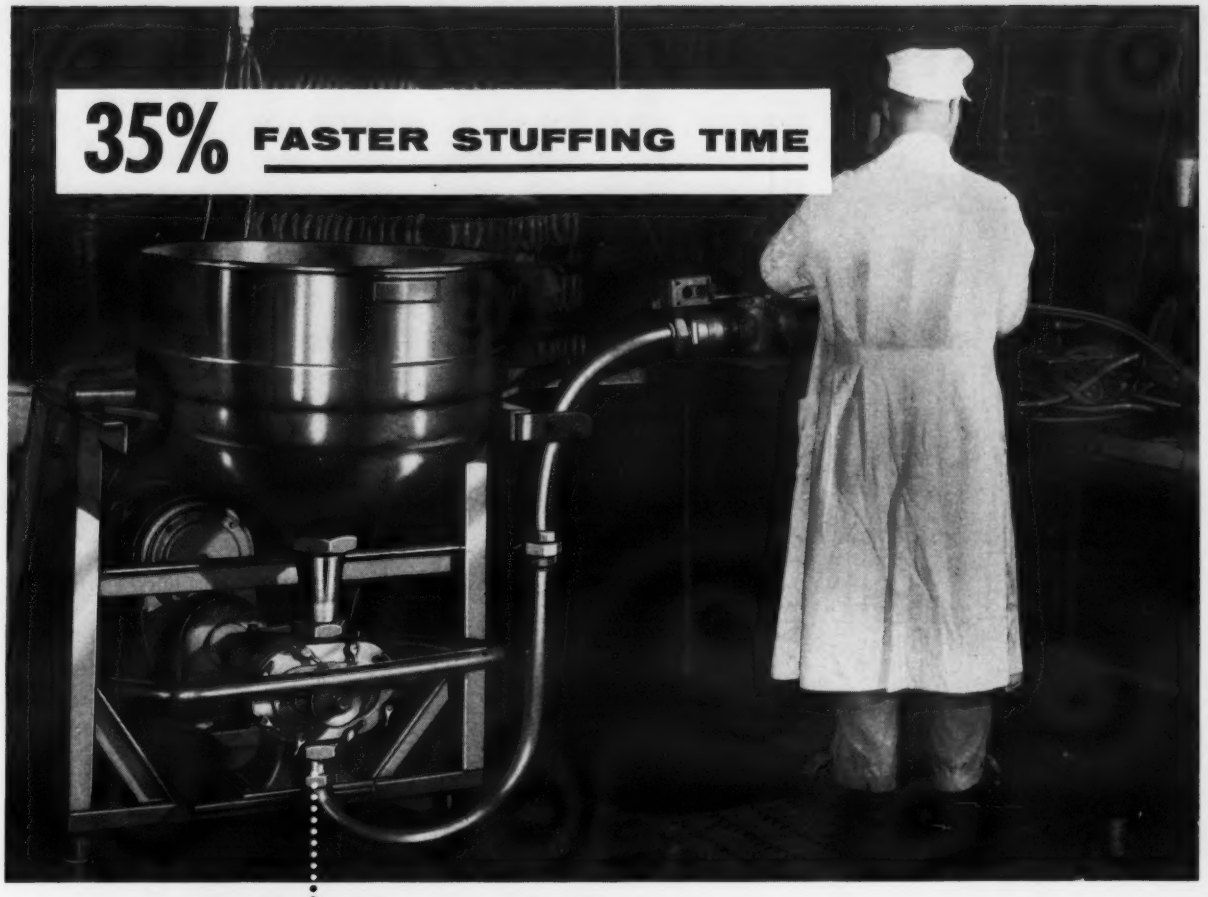
Flexible suspended hinges provide uniform distribution of stress throughout length of door at either side.

Description: Neoprene seals extend length of door's periphery. Spring return at door-top causes door to close by itself.

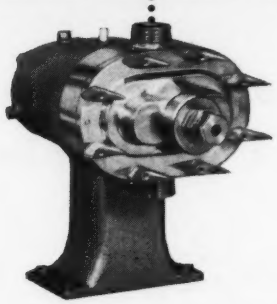
Door is constructed to fit standard openings.

(Shock absorber door is a product of the Clark Door Company, 515 Hunterdon St., Newark 8, N. J.)
5714 on Reader Service Slip.

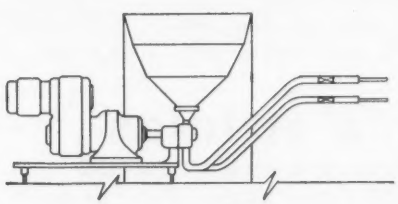
"Ever hear of the wax dip method for removing feathers?"



WAUKESHA PUMP *increased production 700 lbs. per hr. at this leading midwest packing plant.*



Model 55 DO Waukesha Metal 3" side-mounted vented cover pump. Sanitary . . . easy to clean . . . no tools. The only sanitary pump that offers a factory reconditioning policy . . . a guarantee against costly down time . . . assures longer life.



We urge you to consider these profitable savings in time and efficiency. This leading meat packer has increased the speed of stuffing operation by 35% with the same number of operators.

At the heart of this automated system is a Waukesha sanitary positive displacement pump. The pump is automatically controlled . . . will even stop feeding when stuffing horn is closed. Linking machines are kept constantly productive with this big volume step-up in the stuffing operation.

This same system can be easily modified to fit your plant. Tested and proven by leading meat processors from coast to coast. Let our engineers help you automate your stuffing operation for greater volume at less cost.

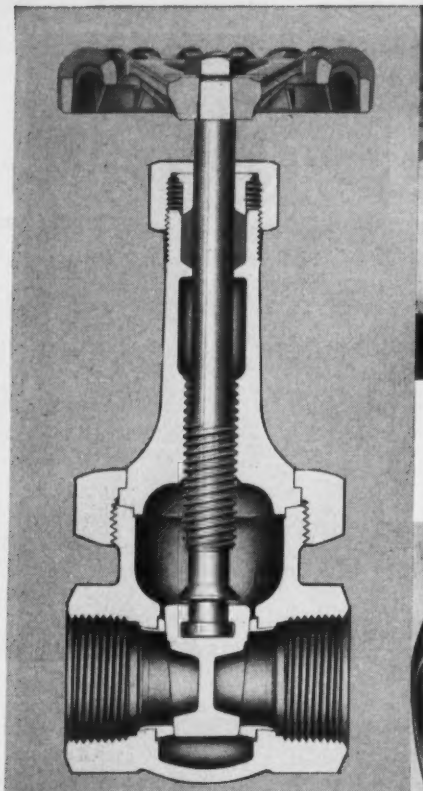
WRITE FOR APPLICATION REPORT 100

Here's a factual engineering report of findings in the meat processing industry. It graphically illustrates the transfer of meat emulsion products through a series of Waukesha Pumps. We will send this report to you on request. Ask for Report 100.

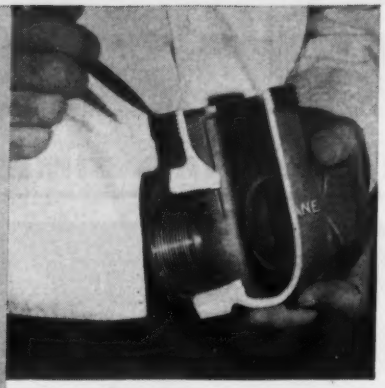
Write . . .

WAUKESHA FOUNDRY COMPANY
DEPT. 37, WAUKESHA, WISCONSIN

5715 on Reader Service Slip.

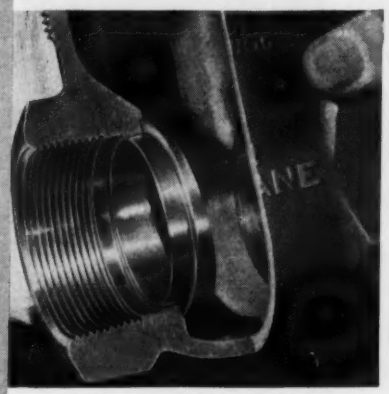


COMPLETELY NEW—loaded with improved service features inside and out. Two complete lines: rising stem pattern (No. 634E—cross section shown), non-rising stem (No. 636E)—both in sizes ¼ to 3 in. incl., with screwed ends. See below for literature.



NEW CYLINDRICAL BODY SHAPE—a proven design on high-pressure steel valves—increases strength without added bulk, distributes pressure load uniformly, resists distortion and leakage at seats.

NEW, STRONGER HEX ENDS, better integrated with body, eliminate sharp contours, give entire valve more rigidity under line strains. Wider hex faces allow firmer wrench grip for easier installation. Marring less likely.



NEW, EXPANDED-TYPE BODY RINGS insure long, tight-seating service life. They're rolled in, can't work loose. Shoulder at bottom of end threads restrains excessive entry of pipe against possible seat damage.

NEW EXELLOY, 12% chromium steel body rings give a hard bearing surface, highly resistant to wear, indentation, scoring and foreign matter damage. Easily replaced bronze disc takes the brunt of normal wear.

New design for tough service...easy maintenance

300-Pound Wedge Disc Bronze Gate Valves

Rising Stem and Non-Rising Stem Patterns

A new body shape that distributes greater strength uniformly against internal stresses and external strains . . . better integrated hex ends, huskier and wider, that add to body rigidity and give a firmer wrench grip . . . new rolled-in, high wear-resisting alloy body rings that don't work loose . . . easily renewed wedge disc—these are typical important features of new Crane bronze gate valves.

On your toughest services, these valves assure ultimate durability . . . new ease of application . . . low-cost repairability. And they're priced no higher than ordinary 300-pound integral seat bronze valves.

Easy to Repair—The Disc Takes the Wear

After long, hard service the hard Exelloy (12% chromium) body rings show no appreciable wear. Normal seating wear is taken by the bronze disc. When needed, a new disc, easily slipped onto stem, provides a practically new, tight-seating valve.

Circular Gives The Facts

For complete technical data on both rising stem and non-rising stem patterns . . . size listing, etc., get Circular AD-2340 from your Crane Representative, or by writing to address below.

CRANE® VALVES & FITTINGS

PIPE • PLUMBING • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

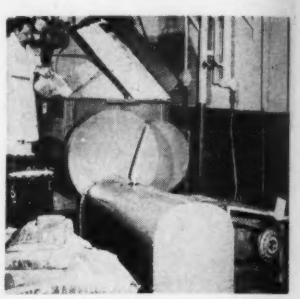
5716 on Reader Service Slip.

Solves severe shock, overload problem

Method that Product Research Company used to reduce constant overloads on a mixer could be applied to similar problems in the food industry.

Trouble occurred on mixer used to prepare heavy, viscous material. It not only had to take overloads as high as 200 per cent, but had to absorb frequent shock loads and operate 24 hours per day.

Net result of this type of loading and duty was that gears and bearings had to be replaced about every 3 months.



Installation of fluid drive saves approximately $1230 per year

Installation of dry-fluid drive has made it practically impossible to overload or shock-load equipment.

Drive members slip for short period during start. They "lock" as full load speed is reached and stay this way till overload occurs.

Drive was installed on shaft of 25 hp motor, connecting it with a four-speed transmission through V-belts and sheaves.

Full description of drive, application photos, charts as well as engineering data and formulas are presented in 24-page bulletin.

("Flexidyne," Bulletin A 640B, is available from Dodge Manufacturing Corporation, Mishawaka, Ind.)

5717 on Reader Service Slip.

For more information on product at right, circle 5718 . . . see information request blank opposite last page.

You can't tell National® Colors from Nature's best!

National Certified Food Colors capture the full beauty of natural fruits at their very peak of flavor. With unerring consistency, they reproduce those appetizing colors time after time..."telegraphing" the flavor before you actually taste it.

We have helped food processors use color creatively for more than 50 years. With the broadest range of primary and secondary colors made, we can match any shade you desire. We'll gladly put our long experience to work for you.

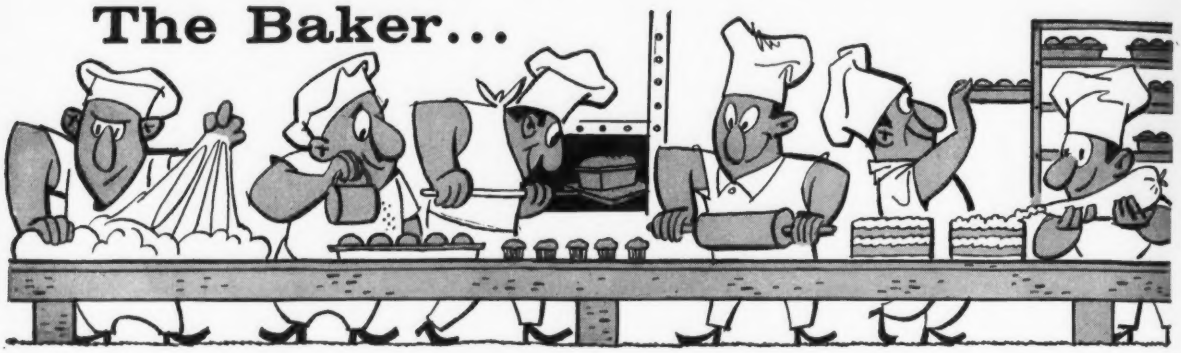
NATIONAL® CERTIFIED FOOD COLORS

NATIONAL ANILINE DIVISION
40 RECTOR STREET, NEW YORK 6, N. Y.
Atlanta Boston Charlotte Chicago Greensboro Los Angeles
Philadelphia Portland, Ore. Providence San Francisco
In Canada: ALLIED CHEMICAL CANADA, LTD., 100 North Queen St., Toronto 14

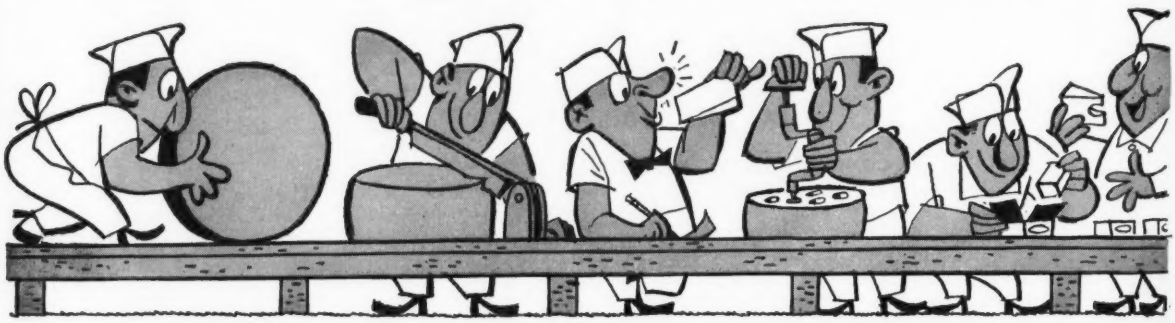
Allied Chemical

The Butcher...

The Baker...



and Champion Cheese Maker...



PREFER THE PURITY OF Diamond "Flake" Salt

• In meat packing, baking, the making of dairy products or the processing of any fine foods, you probably take high quality suppliers for granted. You can—with Diamond Crystal.

The high uniform purity (99.95%) of Diamond "Flake" assures true salt flavor. And it is quickly soluble to bring out the best in your products.

If you have a salt problem—call The Man from Diamond Crystal. He has the facts, the proof—and the service.

Diamond Crystal Salt Co.

Akron, Ohio • St. Clair, Mich. • Jefferson Island, La.

5719 on Reader Service Slip.

To prevent boil-off of juices during baking, one cup of a dry blend mixture of sugar and algin powder is sprinkled over apple slices in each pie. Algin also has wide use in bakery stabilizing applications with icings, toppings, meringues and fillings to aid whip, retard syrup separation, check melting, eliminate stickiness and prevent dry out

Retards boil-off of juices during pie baking

Eliminates sticking of pie crust to sides and bottom of pan to provide easy removal of cut pieces of pie

Examining apple pies as they come off the production line from the ovens, Ted Turner, President, California Pie and Baking Company, notes that juices have not boiled out

Algin, a natural gum product extracted from giant kelp that grows in the coastal waters of Southern California, is now being used by California Pie and Baking Company, Brooklyn, N. Y., to retard boil-off of juices during baking of fresh apple pies.

Supplied in powdered form, algin is readily soluble in water. One part algin easily absorbs 100 parts of water to form a soft gel which is odorless and tasteless.

Thus, a low concentration of algin (used at about 0.25 per cent of total apple pie filling) readily absorbs juices released from apples exposed to high baking temperatures.

It has proven to be particularly effective in reducing the amount of boil-off with sliced green apples which have high

(*Continued on page* 71)

Speed processing the
natural way

with
TAKAMINE ENZYMES

There is hardly a food product that cannot be improved by enzymes, or a process that can't be aided by these desirable catalytic agents. Takamine enzymes have been especially effective in the production of chocolate syrups, wines, ciders, beer, meat tenderizers, cereal products and animal feeds. These willing workers offer these basic advantages:

• **Are of natural origin.** • **Highly specific in their actions.** • **Work best at mild temperature and near-neutral pH.** • **Act rapidly at relatively low concentrations.** • **Readily inactivated when action is complete.**

Takamine research is constantly developing new materials and methods for the food processing industry. We may be able to help solve your particular processing problem. Please write us for complete information.

It will TASTE better, LOOK better, SELL better with Takamine Enzymes!

TAKAMINE® Miles Chemical Company
("pronounce it Tack-a-ME-nee)
division of Miles Laboratories, Inc.
Clifton, New Jersey
phone PRescott 9-4776 or TWX PAS-78
9TAK-20

5720 on Reader Service Slip.

m-m-m-m-mad for vanilla

. . . and he's not the only one. Every year, your vanilla customers grow larger in numbers and capacity . . . more demanding of the quality and aroma which only vanilla can give. If you can afford to give them this in pure vanilla . . . from cookies and ice cream on to souffle . . . fine. But, if price is a factor, then we suggest . . . **Felton imitation vanilla bean aroma #1290 . . . $16 per lb.** Add 1/10 of 1% to your regular imitation vanilla to produce a characteristic mellow bean note. Or RESANILLA #859 . . . $15.50 a gallon—a scientific, flavorful blend of natural and imitation ingredients. Use ½ oz. per 100 lbs. cream centers, fondants, icings. Use 1-1½ oz. per 100 lbs. caramels, fudge, toffee, etc. Use 2 oz. per 100 lbs. baked goods. Use ½ oz. per 10 gallon mix for ice cream.

FELTON

Write for samples. / 599 Johnson Avenue, Brooklyn 37, N.Y.

For more information on product at left, circle 5721 see information request blank opposite last page.

(*Continued from page 69*)

moisture and acidity.

Because algin prevents loss of juices during baking, there is no loss of weight in baked apple pies. With algin added, there is no spilling of sugar juices between pie crust and sides or bottom of pan, which causes carmelization.

Thus, pies do not stick, permitting easy removal of cut pieces of pie. This means greater consumer satisfaction.

The prevention of Carmelization also serves to eliminate the charring of boil-out juices on bed plates of traveling ovens, resulting in a cleaner oven as well as less chance of gas jets being plugged.

Blended with sugar

For easy application, algin powder is dry blended with sugar and cinnamon. Two-and-one-half pounds of algin powder is blended with 100 pounds of sugar to produce a quantity of dry blend sufficient for 400 10-inch pies.

At the California Pie and Baking Company, fresh sliced apples are placed in the bottom of pie shells in pans on a conveyor line.

One cup of dry blend (algin and sugar mixture) is sprinkled over apple slices in each pan, as shown on page 69. Top crust is placed on pies, which are conveyed directly to ovens where they are automatically placed in the feed end of the oven.

(Keltose algin powder is a product of Kelco Company, 31 Nassau St., New York 5, N.Y.) 5722 on Reader Service Slip.

A guide to ascorbic acid in cured meats

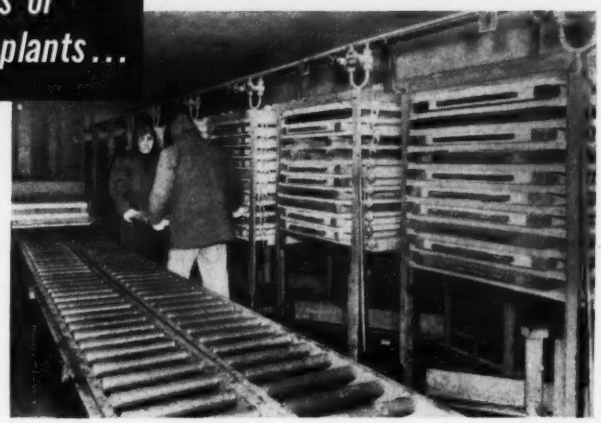
How to use ascorbic acid products in cured meats is subject of 24-page bulletin. Bulletin includes information on what ascorbic acid, sodium ascorbate and coated ascorbic acid are, how they work in meats and what they do in cured meats.

Also included are discussions of their limitations and

(*Continued on next page*)

Wherever you refrigerate food...

in package freezers, display cases or frozen food plants...



Insist on

genetron®
SUPER-DRY
REFRIGERANTS

"Genetron" super-dry refrigerants are universally accepted for use as original or replacement charge in modern equipment designed for fluorinated hydrocarbon refrigerants. Leading manufacturers of frozen food refrigeration equipment approve them. Refrigeration engineers specify them. Wholesalers recommend them. Servicemen and contractors know they can depend on them. That's because "Genetrons" offer unexcelled purity and dryness . . . and their strict quality specifications are consistently *bettered* in production. "Genetrons" are available from wholesalers everywhere, coast to coast.

See your wholesaler! Insist on "Genetron"!

A "Genetron" Super-Dry Refrigerant for every frozen food application!

genetron 11 ORANGE LABEL CCl_3F TRICHLOROMONOFLUOROMETHANE
genetron 12 WHITE LABEL CCl_2F_2 DICHLORODIFLUOROMETHANE
genetron 22 GREEN LABEL $CHClF_2$ MONOCHLORODIFLUOROMETHANE
genetron 113 PURPLE LABEL $C_2Cl_3F_3$ TRICHLOROTRIFLUOROETHANE
genetron 114a BLUE LABEL $C_2Cl_2F_4$ DICHLOROTETRAFLUOROETHANE

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N.Y.

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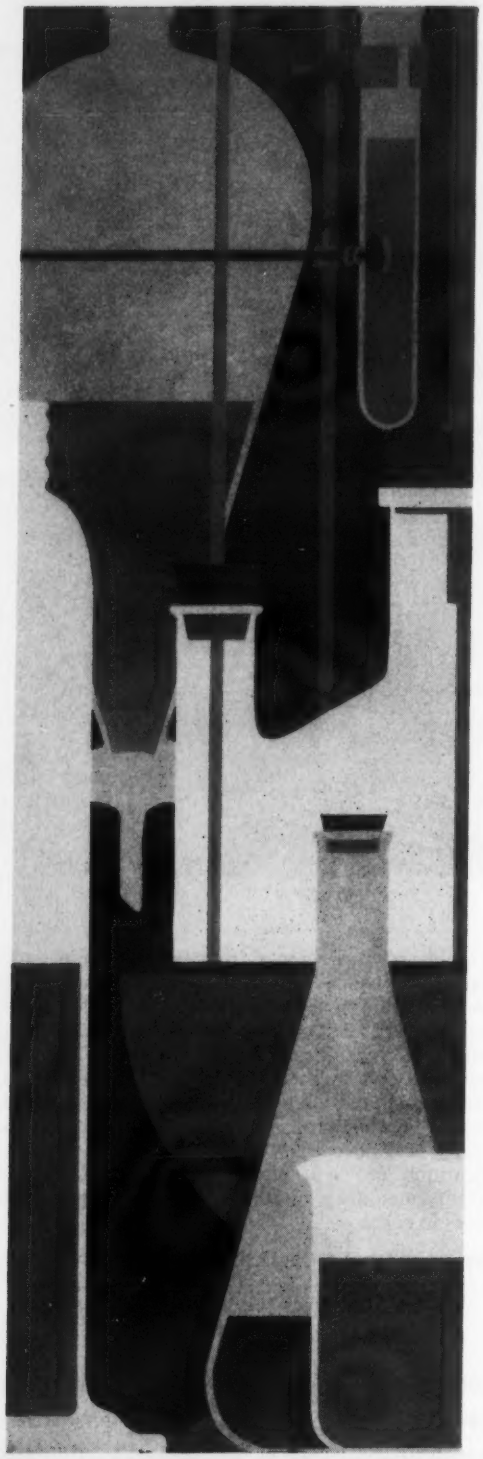


A QUALITY-IMPROVED PRODUCT of FRITZSCHE RESEARCH

METHYL ANTHRANILATE *EXTRA*

This specially purified, premium quality product imparts the luscious, full-bodied character of vine-ripened grape. Entirely free of the usual harsh amine-like notes, it is now available—a truly superior product—at no increase over established costs. Sample our Methyl Anthranilate Extra and compare it critically both for quality and cost.

FB INC. **FRITZSCHE BROTHERS, Inc.**

A FIRST NAME IN FLAVORS SINCE 1871

76 NINTH AVENUE NEW YORK 11, N. Y.

Branch Offices and *Stocks: Atlanta, Ga., Boston, Mass., *Chicago, Ill., Cincinnati, Ohio, Greensboro, N. C., *Los Angeles, Cal., Philadelphia, Pa., San Francisco, Cal., St. Louis, Mo., Montreal and *Toronto, Canada; *Mexico, D. F. and *Buenos Aires, Argentina. Factories: Clifton, N. J. and Buenos Aires, Argentina.

5724 on Reader Service Slip.

(*Continued from preceding page*)

the legal aspects of their use. General procedures for their use are outlined as well as procedures for spraying cured meats and meat products.

A number of color plates compare cuts of meat which have been treated with ascorbic acid with those which are untreated. Handling tips, safety angles and packing information are offered as part of the complete discussion.

("The Use of Ascorbic Acid Products in Cured Meats", 24-page bulletin, is available from Hoffmann-La Roche Inc., Vitamin Division, Nutley 10, New Jersey.)
5725 on Reader Service Slip.

Sugar types and uses

Types and uses for sugar, as well as discussion of its competitive products, is subject of 26-page booklet.

Included is a discussion on the origin of sugar and source and make up of refined sugar, brown sugar, raw sugar, invert sugar, liquid sugar, refiner's sirups and molasses.

Various types of sugars and their specific uses in the food industry are also listed. Among competitive products discussed are corn sirup, honey, maple products, lactose, maltose, sorbitol, saccharin and cyclamates.

Sections of the book are also devoted to taste factors of various sugars and sweeteners and to information on cost of ingredients in food products.

(Booklet on "Sugar . . . Its Types and Uses — Competitive Products" is available from Sugar Information, Inc., 52 Wall St., New York, N. Y.)
5726 on Reader Service Slip.

Lists flavor amount for specific foods

Flavor products for specific food items are listed in 20-page catalog. List includes amount of flavoring to use for such foods as fondants and liquid fillings, boiled sweets, jelly fruits, toffees, fatty fill-

ings, milk puddings, water puddings, jelly, desserts, ice cream mix, etc.

Prices are also included in catalog, as well as a sirup making table and a conversion table for weights, liquid volume and temperature.

("Selected Flavoring Materials", Cat F 59/60, may be obtained from Dragoco Inc., 250 W. Broadway, New York 13, New York.)
5727 on Reader Service Slip.

Meat curing aid and antioxidant

A meat curing aid and antioxidant is subject of 4-page technical bulletin. Amounts and use of ingredients are discussed for sausage meat, frankfurters, luncheon meats, ham, bacon and briskets.

Recommendations for use by the Meat Inspection Branch of the USDA is part of the information included. There is also a short discussion on the spraying of sliced, packaged luncheon meats with the product.

("Curona", Technical Bul 202 on an ingredient used as a meat curing aid and antioxidant, may be obtained from Wallerstein Company, Division of Baxter Laboratories, Inc., Wallerstein Square, Mariners Harbor, Staten Island 3, New York.)
5728 on Reader Service Slip.

VOTE FOR YOUR FAVORITE CARTOON

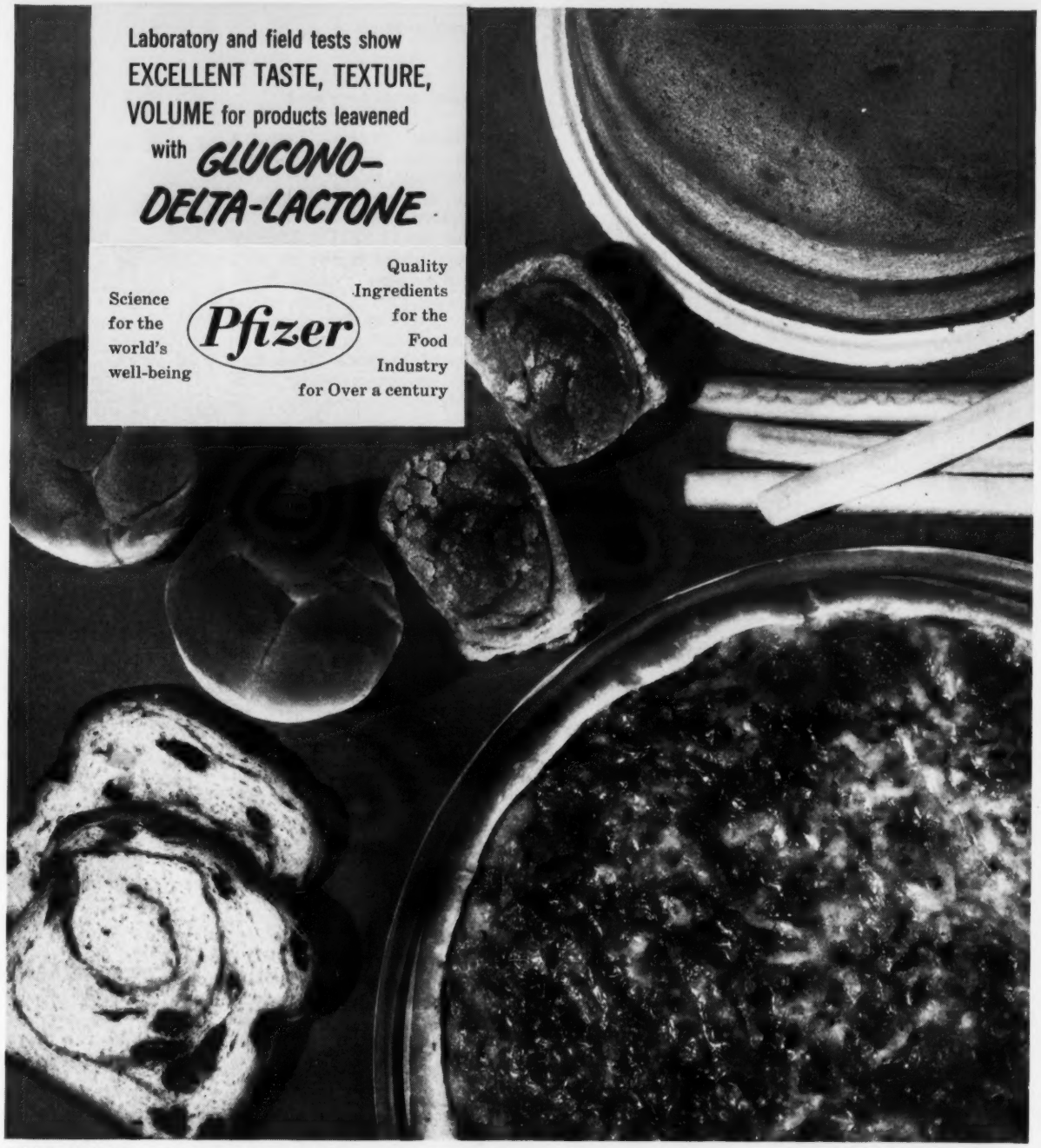
See this month's "FP Hall of Fame Cartoon" on page 114, and then vote for large reproduction of your favorite on the Reader Service Slip.

Laboratory and field tests show
EXCELLENT TASTE, TEXTURE, VOLUME for products leavened with GLUCONO-DELTA-LACTONE

Science for the world's well-being

Pfizer

Quality Ingredients for the Food Industry for Over a century



CAKE MIXES • CINNAMON ROLLS • BREAD STICKS • ROLLS • PIZZA • RAISIN AND OTHER BREADS

The baked goods you see here were made with G-D-L. They have a fine, even texture, show excellent volume, and have no unpleasant after taste.

In addition, G-D-L's observed low level of activity in storage and in the mixing stage indicates that there is very little loss of leavening power during normal shelf life and only slight release of carbon dioxide during mixing. The fact that the gas is developed mainly in the baking cycle is a distinct advantage in prepared cake mixes, general purpose mixes and specialty mixes where long shelf life is a factor.

I am interested in investigating the potential of G-D-L in my products. Please send me:
☐ G-D-L Technical Data ☐ Free Sample of G-D-L
☐ Suggested G-D-L formulations

Name_____
Title_____
Company_____
Address_____
City_____ State_____ P

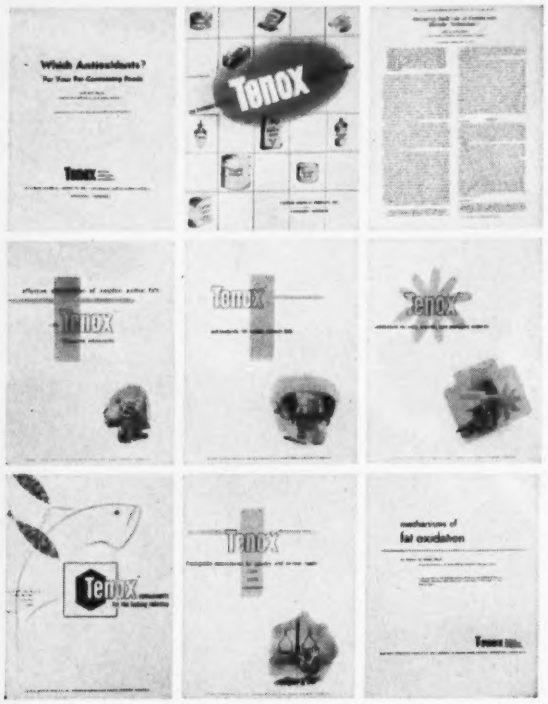
CHAS. PFIZER & CO., INC. • *Chemical Sales Division* • 630 FLUSHING AVENUE, BROOKLYN 6, N. Y.
Branch Offices: Clifton, New Jersey • Chicago, Illinois • San Francisco, California • Vernon, California • Atlanta, Georgia • Dallas, Texas • Montreal, Canada

▶ This literature can help you

broaden your product line expand your marketing area

Longer shelf-life, gained through the intelligent use of antioxidants, has often spelled the difference between success and failure in marketing a food product. Key to the intelligent use of antioxidants is, first, an understanding of their function.

To help you obtain that understanding, Eastman offers the following literature.



- WHICH ANTIOXIDANTS FOR YOUR FAT CONTAINING FOODS
- THE EASTMAN FAMILY OF TENOX FOOD-GRADE ANTIOXIDANTS
- INCREASING SHELF LIFE OF CEREALS WITH PHENOLIC ANTIOXIDANTS
- EFFECTIVE STABILIZATION OF INEDIBLE ANIMAL FATS WITH TENOX
- TENOX ANTIOXIDANTS FOR EDIBLE ANIMAL FATS
- TENOX ANTIOXIDANTS FOR MORE EFFECTIVE FOOD PACKAGING MATERIALS
- TENOX ANTIOXIDANTS FOR THE FISHING INDUSTRY
- TENOX FEED-GRADE ANTIOXIDANTS FOR POULTRY AND ANIMAL FEEDS
- MECHANISMS OF FAT OXIDATION

Eastman manufactures all the principal types of food-grade antioxidants in commercial use today and, in addition, maintains fully-equipped laboratories staffed with antioxidant specialists with years of experience in this field. We can, therefore, suggest without bias the most effective antioxidant for your product and the most practical method of addition.

For any of this literature about antioxidants, write to EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

Tenox Eastman food-grade antioxidants

5729 on Reader Service Slip.

ingredients

Hickory smoked yeast

Hickory smoked brewer's yeast and hickory smoked torula yeast, in dry, powdered form, are now available as flavorings and seasonings.

The naturally hickory smoked products may be used to add a meaty, smoked flavor to canned meats, soups, stews, sauces, bakery foods such as crackers or other snack items, prepared mixes, dressings, frozen prepared cooked foods and specialty items.

(Hickory smoked brewer's yeast and hickory smoked torula yeast are products of Vico Products Company, 415 W. Scott St., Chicago 10, Ill.) 5730 on Reader Service Slip.

Speed baking time, improve protein quality

Two chemical food ingredients are now available for speeding up baking time and improving quality of protein in the final baked product. They are glucono-delta-lactone and l-lysine.

Glucono-delta-lactone, a chemical leavening agent, can cut baking time for bread from five hours to 50 minutes. It is used as part of a chemical leavening system to produce bakery goods with excellent volume, a fine, even texture and no unpleasant aftertaste.

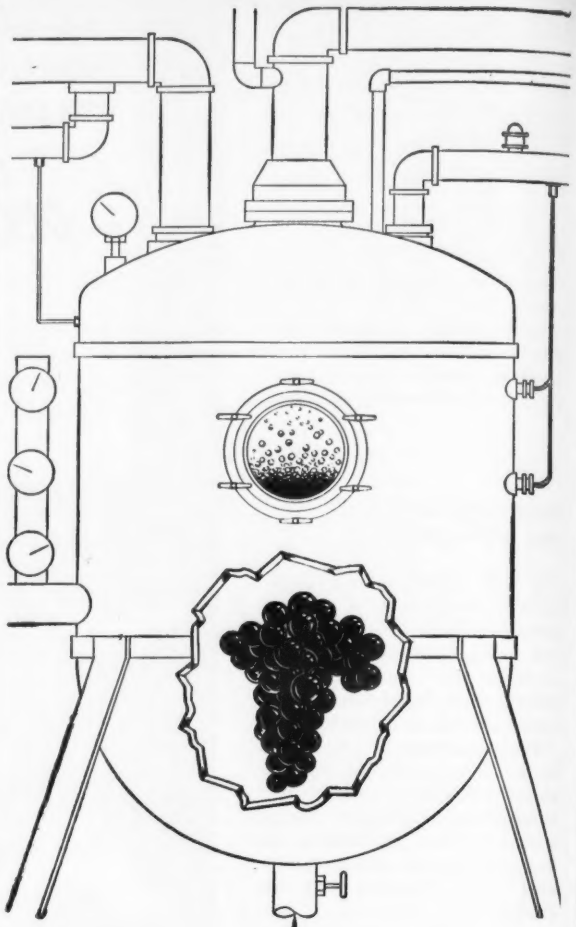
Due to its low level of activity in storage and mixing stage, there is little loss of leavening power during shelf life and and only slight release of carbon dioxide during mixing time.

This feature offers an advantage in cake mixes, general purpose mixes and specialty mixes such as those for cinnamon rolls, pizza shells, muffins, doughnuts and bread sticks.

In such products as doughnuts, cakes and other sweet goods, it also improves texture, volume and flavor.

L-lysine, one of the 8 essential amino acids, is being used as a supplement to improve protein utilization in a number of foods made from cereal

(*Continued on page 76*)



Real Fruit Flavors...

WITH THE FUGITIVE AROMAS *CAPTURED!*

You can improve your product amazingly—by use of FLAVOREX *real fruit flavors.* Our "Low Temp" process coaxes out and captures the very last drop of goodness in the natural fruit. Those delicately elusive, but important, volatiles now are collected and entrapped in our real fruit concentrates . . . so that all the full, rich, good taste goes directly into your product. Available—black raspberry, black cherry, grape, strawberry, blackberry, punch, lemon and orange—as real fruit pure concentrated juices. Or with other natural flavors for added strength. Write for samples and prices today.

Better Flavors for Better Products

FLAVOREX CO., INC.

302 S. CENTRAL AVE., BALTIMORE 2, MD.

5731 on Reader Service Slip.

Here's what Flo-Sweet "R & D" means to you

New products through research
are helping many companies
set new sales records

Refined Syrups maintains a comprehensive research and development laboratory. This means Flo-Sweet is constantly improved, processes are kept up-to-date, and the significance and utility of new sugars are continually under study.

Flo-Sweet's liquid sugar system was the earliest form of bulk handling, preceding by many years today's trend to advanced materials handling of oils, flour, granulated sugars, fats, etc. Specialized knowledge gained through this pioneering makes it possible for Flo-Sweet to offer:

1. COMPLETE ENGINEERING SERVICE – Design and installation of customer receiving, storage, and distribution systems with built-in controls of meters, pumps, and valves for push-button operation.

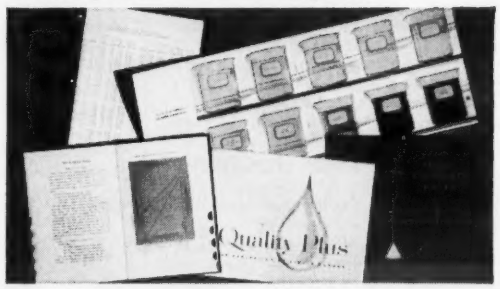
2. AUTOMATION – Coolers for bakers . . . heaters for fast and economical water removal . . . and specialized equipment designed by Flo-Sweet make possible continuous processing.

3. QUALITY IMPROVEMENTS – Removal of turbidity assures a truly neutral sweetener that safeguards flavor, aroma, and taste. Reduction of mineral content (ash) to .005% maximum and production of colorless liquid sugar, measures of sugar purity, are achievements of research.

4. NEW SWEETENERS – Flo-Sweet customers are enjoying the advantages of Sucrodex (sucrose-dextrose sugars), Inverdex (invert-dextrose sugars), and liquid sugar/corn syrup blends – a whole new family of sweeteners formulated to meet individual requirements.

In R&D, as well as in every phase of the company's service to industrial sugar users, Flo-Sweet resolves:

- **To help solve customers' problems.**
- **To offer products priced competitively and beyond reproach in quality.**
- **To earn the right to the continued confidence of sugar users, by keeping creatively alert to new developments.**



Flo-Sweet research has helped customers solve many problems. Factual reports, technical papers, illustrated brochures, and an authoritive handbook have been published to disseminate information as widely as possible.

Circle 5732 opposite last page.

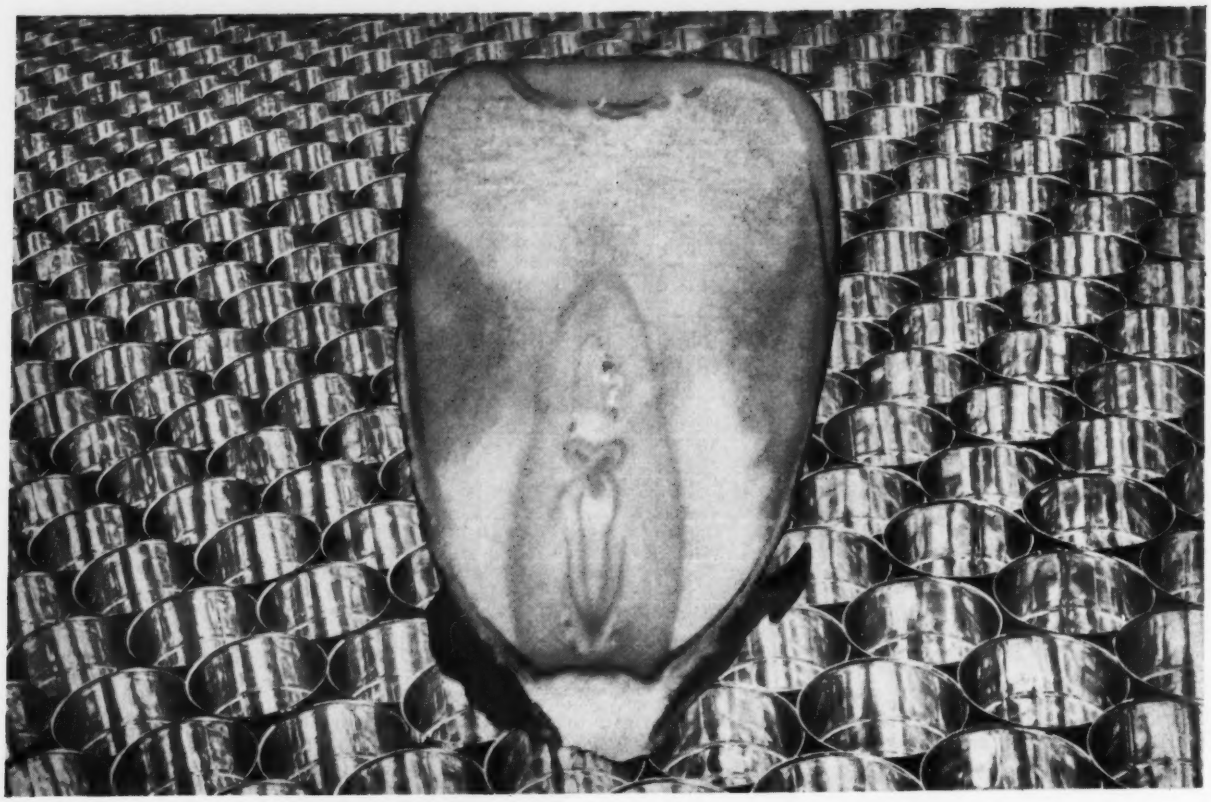
REFINED SYRUPS & SUGARS, INC.

YONKERS, NEW YORK

SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY
FROM YONKERS, ALLENTOWN, DETROIT, TOLEDO

FLO-SWEET®

SPECIAL STARCHES



for Special Effects in Canned Foods

Special Starches from National simply stabilize or thicken. Nothing else! As stabilizers they never cloud color, never mask flavor. As thickeners they maintain viscosity characteristics even after extended storage. The result is these six special effects:

- Full Natural Color
- Full Flavor
- Smooth Creamy Flow
- Uniform Viscosity
- Shelf Life Stability
- Breakdown Resistance

These unusual starches are refined from corn, amioca or tapioca. They improve canned foods that range from soup to dessert. We'd like to show you how. Just write, including a description of your product or problem.

National STARCH and CHEMICAL CORPORATION

750 Third Avenue, New York 17 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

5733 on Reader Service Slip.

(*Continued from page 74*)

products. Most grains from which cereal foods are made, do not contain all of these essential amino acids, the building blocks of protein found in meat, fish and eggs in proper balance. The most serious deficiency is the amino acid lysine.

Cereal products can, however, be given a protein quality approaching that of meat by supplementing them with a small amount of lysine. Thus, items such as bread, cookies, and cakes can be converted into good protein foods.

(Glucono-delta-lactone and l-lysine are both products of Chas. Pfizer & Co., Inc., 630 Flushing Ave., Brooklyn 6, New York.)
5734 on Reader Service Slip.

Adding fat to pellets is best method

Mixing fat with feed can be done either by adding it prior to pelletizing or after the pellets are produced.

Current research findings, presented in a 4-page brochure, indicate that adding fat to pellets is the best method.

Although feeds can be pelletized successfully with 2 to 3% fat added, above this (3 to 5%) it has been difficult to produce good hard pellets that will withstand handling.

The higher fat provides additional lubrication, which in this case is undesirable. It permits the feed to pass through the die more rapidly and consequently it is less compacted.

On the other hand, the cost of adding fat to pellets is higher than the cost of adding fat to meal.

With the continued growth in the use of stabilized fats in feeds, manufacturers are continuing research to produce fat-fortified feeds more economically than at present.

(The technical report, "Adding Fat to Feeds", is available from Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pennsylvania.)
5735 on Reader Service Slip.

After filling on automatic bag former-filler, sealed polyethylene pouch is placed in Kliklok carton (right) which then is overwrapped (left) and sent to freezer. Below is conventional metal-end canister

'Thaw-in-pouch' frozen strawberry package

- **For housewife** — quick thaw and more convenience
- **For processor** — savings in materials, labor, in-plant storage space

New "thaw-in-pouch" frozen strawberry package—consisting of a 10-oz or 16-oz inner polyethylene pouch (2½ mil), paperboard carton and overwrap—offers major advantages over conventional metal-end canisters.

Most important plus feature could be package's outstanding "housewife appeal"—based on easier opening of outer carton and speedy thawing of contents when inner poly pouch is placed in lukewarm water.

Complete thawing in six to nine min represents about 84 per cent less time than re-

(*Continued on next page*)

Both the new package at left and conventional canister at right came from freezer into lukewarm (100 F) water for 9½ min

Labeling Lines

by George L. N. Meyer, Jr.

LABELING STANDARDS

LABELING STANDARDS

Setting and maintaining standards is of great importance in labeling machine operations. This practice can, and will, save your company substantial sums of money. Those labeling operations which are not based on a standard are often plagued by unnecessary "downtime" . . . resulting in both loss of production and loss of money.

HOW?

There are four areas which must be clearly defined when setting up standards in your labeling operation; the glass, the label, the glue, the machine.

GLASS

The ideal start requires an accurate drawing of each glass container which should be obtained from your supplier. Even if you purchase a "stock" bottle, ask for a drawing so that you may establish a standard for that particular bottle.

With this drawing you can specify the area on which the label is to be applied. The drawing will also permit you to check the contour of the bottle in the labeling area so that you can "locate" the label. By doing this, you can be sure straight sides will be obtained and that the label application will be perfect. You will also be able to specify fill height and if a variance is noted you can logically assume that the bottle is not up to standard.

In short . . . the first requisite for labeling success is consistent glass. If you fail to establish standards you will frequently overlook one of the most important and most elusive variables on the production line.

LABELS

Decide on label sizes and shapes *and* set exact standards or tolerances for each label. You will find label suppliers are able to hold closer tolerance on die-cut labels than on guillotine-cut labels. Generally speaking, suppliers will make every effort to conform to your specifications.

Here's a "tip"—Make sure your labels are *cut printed side up* so that the shearing or cutting action of the knife or die causes the label to curl in the direction of the wrap. If you're using die-cut labels, and a multiple die is used, ask your supplier to package the output from each die in its own box. Then . . . even if the dies vary slightly, you'll know that all the labels in any particular box have come from the same die. The labeler can be adjusted for any variance when a new box is opened.

Remember too, that when dies are resharpened your label size will increase to some degree. Metal is removed in the sharpening operation and the die will grow in size. Set a die-cut standard and you'll eliminate another cause of downtime or constant machine adjustment. Incidentally, ask your printer to insert cardboards top and bottom of the label sheets when he uses a guillotine cutter . . this helps the labels to stack in a perfectly flat fashion.

COMPOSITE

On your glass standard drawing incorporate an *accurate* outline of the label or labels to be used in their exact location. Mark in the dimensions, on this composite, most carefully. You now have a "standard" for two of the variables mentioned earlier; glass and labels. Adhesives will be discussed in a forthcoming "Labeling Lines."

Variations in glass, labels, or glue can play havoc with a high speed labeler, no matter how carefully your machine is engineered. More . . . your "standards" can be used to excellent advantage by your labeling machinery manufacturer to be certain your equipment is properly adjusted before it's shipped.

World's Largest Manufacturer of high-speed Labeling Machinery

WORLD LABELERS

ECONOMIC MACHINERY COMPANY • Worcester 3, Mass. / Div. of Geo. J. Meyer Manufacturing Co.

5736 on Reader Service Slip.

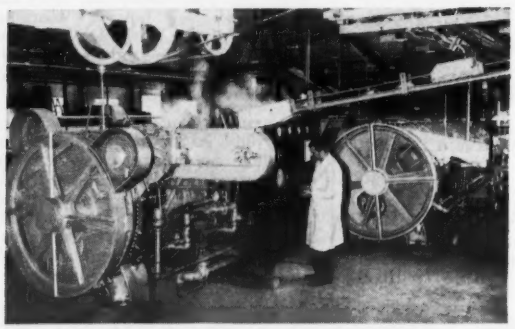
9 Ways to Better Processing ..... with FMC "STERILMATIC"

Continuous Pressure Cooker and Cooler

There is only one way to determine positively whether – and to what degree – this list of recognized advantages would apply to your plans for the future. Your FMC representative, supported by factory and field food process application engineering experts, is prepared to meet with you and your staff to discuss and evaluate this equipment in the light of your particular set of problems and objectives. There is no obligation for this service. If FMC "Sterilmatic" equipment is right for you, it can be thoroughly and efficiently demonstrated. There may be unusual profit possibilities through this investment. Why not investigate, today?

1. **Utilizing the accepted "in-can" method of complete sterilization.**
2. **Over-all processing times are greatly reduced, because of the faster heat penetration achieved by can agitation and higher temperatures.**
3. **Every can is cooked individually, continuously, evenly and with absolute uniformity.**
4. **Provides for the highest retention of natural color, flavor, texture and nutrients.**
5. **Centralized fingertip controls of FMC's "One-Man Cook Room" help produce a pre-determined product quality.**
6. **Fast and gentle movement of cans, plus fewer handlings, speeds up output, reduces can denting and damage.**
7. **Savings in steam alone frequently amount to 50% or more. Water requirements for cooling are minimized due to efficient heat transfer through can agitation.**
8. **Less factory space required in relation to hourly output.**
9. **Universally proven and accepted wherever canners insist on a pack of consistently high and uniform quality.**

*Trade Mark—Reg. U. S. Pat. Off.



FMC "Sterilmatic" Continuous Pressure Cooker and Cooler at Northwest Packing Co., Portland, Oregon. Employing the principle of induced convection heating, rate of heat penetration is increased, cooking is absolutely uniform.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

Canning Machinery Division

General Sales Offices:

WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

5737 on Reader Service Slip.

(*Continued from preceding page*)

quired for complete thawing with conventional package (about one-fifth the time). Tear-string on pouch permits easy opening for transfer of thawed berries to dish.

For the processor, package represents up to 25 per cent estimated total savings in material and labor costs, and components require 83 per cent less in-plant storage space than metal-end canisters.

In one current commercial application, package—using a 2¾-mil medium density polyethylene film—reportedly saves 35 per cent over previous cost for lithographed composite fibre-metal can.

In addition, packages save four per cent on shipping costs (approximately one lb per 24-package carton for the 16-oz size).

While present packers are averaging approximately fifty 10-oz packages per min, new machinery developments will enable this production to go as high as 200 per min for the 1960 pack.

Although the "pouch-in-carton" does require a slightly longer freezing time than the conventional canister, one Western processor, Shasta Freezers, reports that this has not slowed down their production line.

In fact, they believe that a little slower freeze actually is desirable, in that the berries mix in better with the sugar. Also, there seems to be a better retention of color.

As example of new package's increased shelf-display impact, the 10-oz size offers up to 87 per cent more display space than the comparable-size metal-end canister.

(New frozen strawberry package—currently under large-scale market test by several companies—is development of Western-Waxide Division, Crown Zellerbach Corporation, 2101 Williams St., San Leandro, Calif.)
5738 on Reader Service Slip.

(Kliklok carton is manufactured by Kliklok Corporation, 730 Broadway, Redwood City, Calif.)
5739 on Reader Service Slip.

Association News

Packaging Institute's

21st Annual National Packaging Forum, to be held November 16-18 at the Statler-Hilton Hotel, New York City, will feature 12 seminars. First three concurrent seminars, slated for Monday afternoon, Nov. 16, will concern Package Marketing, Research and Development and Safety of Packaging Materials.

On Tuesday, Nov. 17, three concurrent all-day seminars will be devoted to Drug and Pharmaceutical Packaging, Production Line and Machinery and Package Printing (offset lithography and gravure).

Concurrent seminars on Wednesday morning, Nov. 18, will be on Industrial Packaging, Food Packaging and Closures.

Daily registration rates for Packaging Institute members are $23 each for Monday and Tuesday, and $18 for Wednesday — with a special $60 three-day combination rate. Non-member rates are $28 each for Monday and Tuesday, and $23 for Wednesday, with a $75 rate for all three days.

The Conference is concurrent with the Nov. 17-20 Packaging Machinery Manufacturers Show at the Coliseum.

Assn. of Official Agricultural Chemists

has named Dr. Francis A. Gunther, insect toxicologist at the University of California, Riverside, winner of the 1959 Harvey W. Wiley Award, which includes $500 cash. Dr. Gunther was recognized for his success in developing practical analtyical methods for pesticide residues on fruits and vegetables, and his two books and numerous papers covering various aspects of pesticides and pesticide analysis.

(*More on page 95*)

For more information on product at right, circle 5740 see information request blank opposite last page.

WRAPAK

WRAPAK is a modest packaging investment that pays immediate dividends to the manufacturer, the distributor and the retailer in many product lines.

Dividend to the manufacturer: WRAPAK automatic packaging machinery wraps filled containers (cans, cartons or bottles—glass, metal and plastic) of your product with WRAPAK cartons at the high speeds demanded by today's production schedules. In many applications, the WRAPAK system uses substantially less material than is used in conventional partitions and master packers.

Dividend to the distributor: WRAPAK cartons save time in handling and price marking—time and material in reshipment of less than case lots to retail customers.

Dividend to the retailer: WRAPAK makes retail stocking, price marking, and selling easier, more efficient and less costly.

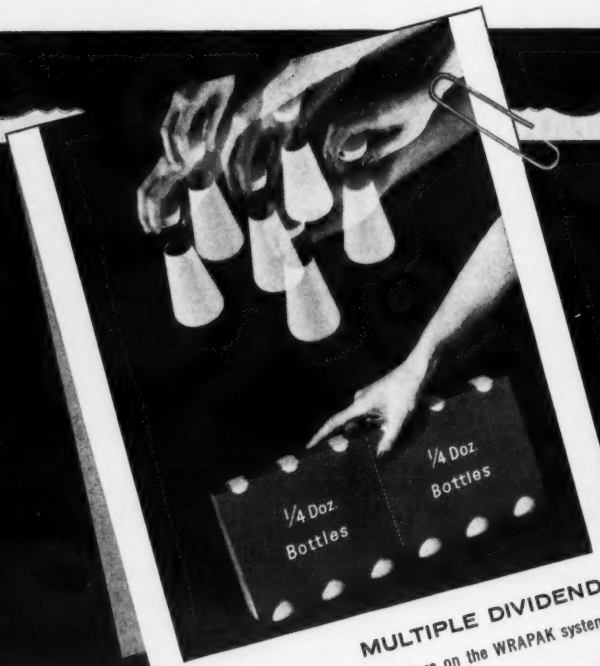
Container Corporation has combined the best qualities of packaging structure, machinery and visual design into the WRAPAK system . . . Let this unique system help make the distribution of your product a more profitable operation—all the way. Write or call for further information.

CCA

CONTAINER CORPORATION OF AMERICA

Valley Forge Marketing Center · 5000 Flat Rock Road · Philadelphia 27, Pennsylvania

FOLDING CARTONS · SHIPPING CONTAINERS · SEFTON FIBRE CANS · PLASTIC PACKAGING



MULTIPLE DIVIDEND

Please send me the new brochure on the WRAPAK system.

We manufacture _____

NAME _____

COMPANY _____

ADDRESS _____

DEPT. _____

Take lubricants, for example

There's a USS steel container to meet almost every shipping need

Petroleum is like many other products, spending some part of its life in a steel shipping container. A wide variety of products arrive at their destinations stable, safe, sanitary, in carbon or stainless-steel shipping containers that are manufactured by United States Steel.

USS steel drums and pails come in a variety of sizes and closures, offering flexibility in choosing a shipping container, whatever you may manufacture. They represent the largest, most complete line available today, for the shipment of products as varied as paint and petroleum, chemicals and food, additives and essences.

• • •

Factories: Los Angeles and Alameda, Calif. • Port Arthur, Texas Chicago, Ill. • New Orleans, La. • Sharon, Pa. • Camden, N. J.

United States Steel Products
Division of
United States Steel

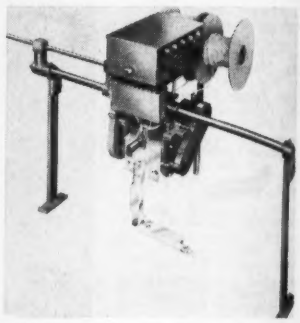
USS TRADEMARK

5741 on Reader Service Slip.

packaging

Continuously bonds even hard-to-stick materials at 1300 linear fpm rate

Uses: Primary usage for new nozzle-type hot-melt-adhesive applicator is expected on converting equipment where the adhesive bonding of continuously moving materials must be achieved under extremely demanding conditions — both of speed and of dimension, or where heavy-textured laminations such as burlap require a generous but controlled adhesive application.



Unit simultaneously feeds the cord-like adhesive from two reels

Among hard-to-stick materials on which the new model is able to apply the adhesive effectively are metallic foils and polyethylene film — both coatings and laminations.

Features-Description: New applicator applies up to one-half lb of adhesive per min, depending on formulation used.

This is more than twice the capacity of previous applicators and equal, for example, to 1300 linear fpm of seam ¼-in. wide and 3½ mils thick. Wider seams or multiple seams may be bonded.

Drive for unit is taken from the base machine through special "drive pack" to sprocket on end of top shaft.

Extreme freedom of nozzle design is possible, making applicator ideal for any number of production jobs.

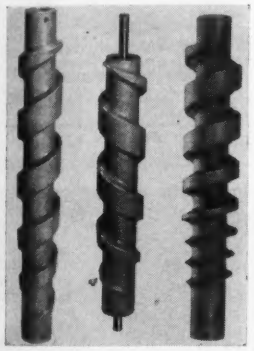
(Nozzle-type Thermogrip Applicator Model BN is manufactured by United Shoe Machinery Corporation, 140 Federal St., Boston 7, Mass.)
5742 on Reader Service Slip.

Feed variety of containers onto wide range of units with

Customized timing screws

Uses: Timing screws feed round, oval, square or rectangular glass bottles, and metal cans or plastic containers onto wide range of packaging machines.

Latter group includes fillers, cappers, labelers, washers and inspection and banding equipment. Device also can be applied effectively as line divider for line synchronization.



Timing screws to fit new container shapes or sizes can be quickly generated and delivered

Features: Device will pick up containers from a conveyor at random, move them under controlled acceleration and speed, then discharge each container at the required spacing for the packaging operation.

Description: Each timing screw is generated to fit a specific container or range of container diameters.

A two-point contact can be maintained, if necessary, between the screw and the container, thus providing maximum stability for moving tall, normally unstable containers.

Timing screws are made of non-marking, long-wearing, resin-impregnated linen or cellulose material. Screws are driven by normal power take-off from the packaging machine drive, assuring absolute synchronization with the operation being performed.

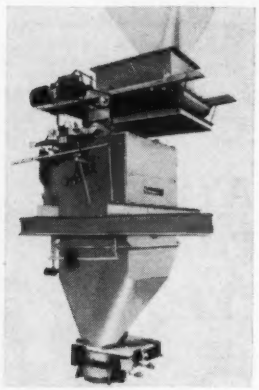
(Customized Kinsley timing screws are manufactured by Arthur Colton Company, Division of Snyder Corporation, 3400 E. LaFayette, Detroit 7, Mich.)

5743 on Reader Service Slip.

Weighs, fills grains, pellets at rates to 750 lb/min

New bagging scale which loads dry feeds into 100-, 50- and 25-lb bags at high speed is subject of illustrated bulletin.

Unit's power-driven belt feeder enables it to fill 50-lb bags at rate of 12 per min for dry mash feeds or range cubes, 15 per min for crumbles or scratch grains.



Scale also comes as a bulk unit, without bag spout, and in a double-capacity duplex model, combining two scales

Tolerances in weighing accuracy are plus or minus zero to three oz, but range cubes and other difficult-to-handle materials produce nominal variations.

Scale's special new feature — a pneumatic gate which is electrically controlled by the weigh beam — permits it to handle 25-lb bags with as much efficiency as 50's and 100's.

Photographs show the unit close up and also in actual operation. Entire page of pro-

(*Continued on next page*)

I. J. GRASS NOODLE CO. DOUBLES PACKAGE PRODUCTION with HAYSSEN COMPAK

The I. J. Grass Noodle Company, Chicago, Illinois, uses the above Hayssen Compak to automatically package their famous chicken and vegetable soup concentrates at continuous production speeds of 124 packages per minute. The 2¼" x 4" bag is a part of the complete dry soup package. This production rate is twice that of their former semi-automatic method and is *accomplished with half the labor force*. Another example of how you save with Compak.

Plant Superintendent William Fieroh has this to say about Compak:

- **HI SPEED** — Our Compak, on a regular two shift day produces 7,440 packages of concentrate at the rate of 124 packages per minute.
- **DEPENDABILITY** — The Hayssen Compak handles all films regardless of film variations in thickness or coating. Compak continues to produce high quality packages without nuisance adjustments or shutdown time throughout our two shifts.
- **ECONOMY** — A plus or minus 2 gram permissible variation is maintained with the Compak volumetric feed. This means minimum product waste, assures uniform product and continued customer satisfaction.

Let Hayssen help you with your automatic packaging problems. Write or call your nearest Hayssen office today!

THIS IS OUR 50th YEAR AT

HAYSSEN

MANUFACTURING CO. • DEPT. FP-114 • SHEBOYGAN, WIS.

Offices in principal cities. Check your phone directory.

Atlanta • Boston • Chicago • Dallas • Denver • Detroit • Jackson, Miss. • Kansas City • Los Angeles
Minneapolis • New York • Philadelphia • St. Louis • San Francisco • Montreal • Toronto • Vancouver

5744 on Reader Service Slip.

Highly Intimate Blends in 1 to 2 Minutes

Blends while discharging; No segregation or flotation

Sturtevant Rotary Blenders start 4-way blending while charging, continue it during discharge, thus producing highly intimate, even blends of dry and semi-dry materials – within 3 to 5 minutes of start of charging.

Six *complete* blending cycles per hour are common. And Sturtevant's special action produces no particle reduction, cleavage or attritional heat – is highly effective yet gentle and safe even with explosives.

Receiving

Scoops cascade material as drum rotates. Movement forces material from both ends to middle. Thus blending is 4-way right from start of charging.

Discharging

Single gate controls charge, discharge. Blending continues throughout discharge phase. Result is no segregation or flotation — highly intimate, even blends.

Self-cleaning, dust-sealed drum; one-man accessibility

Operation of Sturtevant Blenders is self-cleaning – drum interiors are completely dust-sealed. For inspection of all models, one man simply loosens a few lugs to remove manhole cover – quickly and easily.

Nine standard models with capacities to 900 cu. ft.

10 cu. ft. Sturtevant Stainless Steel Blender at U.S. Steel's Applied Research Laboratories. Corrosion and contamination-proof, this unit handles batches up to 500 lbs. — is ideal for critical work or small runs.

Automatically controlled, three 50 cu. ft. Sturtevants blend chocolate powder and other ingredients for Hershey Chocolate Corp. Operating in a group, each Blender can process more than a ton per batch. Quick accessibility and self-cleaning features keep maintenance to one hour per week.

Fully or semi-automatic, or manually controlled operation

Constructed of carbon steel, stainless steel or Monel metal, Sturtevant Rotary Blenders are engineered to fit each customer's needs – can be supplied with injector sprays and any desired control system.

For more on Sturtevant Blenders, request Bulletin No. 080B. (Bulletins also available on Mixers, Air Separators, Micronizers, Crushers and Grinders.) Write today. STURTEVANT MILL CO., 122 Clayton St., Boston, Mass.

5745 on Reader Service Slip.

packaging

(*Continued from preceding page*)

portional drawings illustrates details of construction and dimensions. Special features, both standard and optional, are described.

(Bul No. 0156A, "Richardson GA-38 Multi-Purpose Bagging Scale," six pages, is available from Richardson Scale Company, Van Houten Ave., Clifton, N.J.)
5746 on Reader Service Slip.

Fast-drying ink for corrugated cases

New-type container ink reduces drying time over conventional corrugated-container inks as much as 50 per cent — according to results of tests in several Western container plants.

Besides speedy drying, the ink offers such plus benefits as greater brilliance, much better lay and trap, more "mileage" and much better press stability. Price reportedly is in the reasonable range.

("Speed-Glo" fast-drying ink for corrugated containers is product of The California Ink Company, Inc., 545 Sansome St., San Francisco 11, Calif.)
5747 on Reader Service Slip.

Savings to 50% reported with fibre cans, tubes

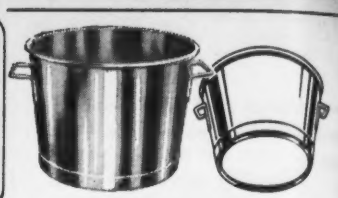
More than 100,000 different kinds of fibre cans and tubes are now in use. Especially adaptable for ready-to-bake biscuits and frozen fruit, pamphlet details the versatility and economy of these containers.

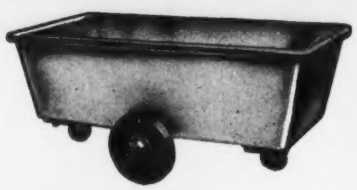
Brochure reports on a survey of 800 manufacturers who currently use fibre cans and tubes for packaging and shipping.

Over 600 of these users note savings up to 50 per cent in material cost alone.

("The Profit Makers—Fibre Cans and Tubes," four pp, is available from the National Fibre Can and Tube Association, 274 Madison Ave., New York 16, N.Y.)
5748 on Reader Service Slip.

STANcase STAINLESS STEEL EQUIPMENT





ALL-SEAMLESS STAINLESS STEEL TUBS
Model No. 98 — 56 qts. or 100 lbs.
Model No. 97 — 34 qts. or 60 lbs.
(Covers Available)
ALL SEAMLESS, STAINLESS STEEL TUBS drawn of one sheet of 18 ga. Stainless Steel. Ruggedly constructed for long-life service, yet light in weight (14½ lbs. and 12 lbs.) Maintained sparklingly clean and sanitary with minimum labor.

STAINLESS STEEL FOOD HANDLING TRUCKS
MODEL No. 36 — of 14 ga. Stainless Steel. Inside dimensions: 58" x 25½" x 17" deep. Three other popular sizes available. Write for catalog.

SANITARY, STAINLESS STEEL DRUMS
Ruggedly constructed for **long-life** service of 16 ga. Stainless Steel. Inside surfaces are seamless and polished; maintained sparklingly clean and sanitary with minimum labor. Foot rings are made of heavy gauge Stainless Steel; take abuse of service (bottom of drums do not rest on floor).

AVAILABLE IN 3 SIZES
MODEL No. 30 — 30 Gal. Cap.
MODEL No. 55 — 55 Gal. Cap.
MODEL No. 60 — 60 Gal. Cap.
(Covers available for Models No. 30 and No. 55)

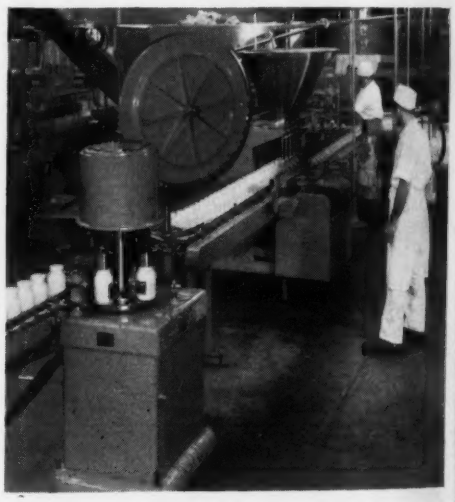
FULLY APPROVED BY HEALTH AUTHORITIES

WRITE FOR CATALOG OF COMPLETE LINE OF SANITARY, STAINLESS STEEL EQUIPMENT

Manufactured by
THE STANDARD CASING CO., Inc. 121 Spring St., New York 12, N. Y.

5749 on Reader Service Slip.

IT PAYS TO CAP'EM with **CAPEM**



Model C-4F CAPEM in action on the new mayonnaise and salad dressing line at Pfeiffer Food Products, Buffalo, N. Y.

This CAPEM machine is applying 70mm caps to 7200 jars an hour. A new Consolidated feature is a special chuck-arresting device which prevents the chuck from descending if no caps are available.

CAPEM Screw Capper speeds range from 2,000 to 20,000 containers an hour for any standard cap or cover and many special types. They combine low initial cost, with low operating and maintenance cost.

CAPEM delivers a perfect *leakproof* seal whether you're processing bottles, cans or jugs of any shape or size. Our customers agree—and you will too—*it pays* to cap 'em with CAPEM!

Write Sales Manager, Consolidated Packaging Machinery Corp., 1400 West Avenue, Buffalo 13, New York

—CAPEM→ THE MODERN SCREW CAPPER

5750 on Reader Service Slip.

Packaging with plastics — a progress report

In past few years, developments in the plastics industry have occurred so fast that industry has scarcely started to use many packaging materials now available.

Newly published "progress report" aims to stimulate creative application of the new materials by acquainting the reader with some of the most significant new developments.

The latter embrace equipment trends, methods and applications and merchandising techniques involved with plastic packaging, as well as the new materials themselves.

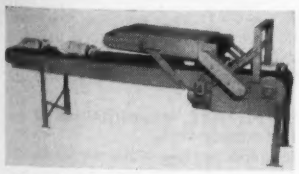
The report's 24 chapters consist of papers originally presented at AMA's Special Plastic Packaging Conference, held in New York City in January 1959.

(AMA Management Report Number 29, "Packaging with Plastics — A Progress Report," 132 pages, is available from Packaging Division, American Management Association, Inc., 1515 Broadway, Times Square, New York 36, N.Y. Cost is $2.50 to AMA members, $3.75 to non-members.)

Flattens filled bags for safe, compact storage

No adjustment needed for different sizes

Uses-Features: Versatile bag flattener is designed to flatten bags as they come from filling machines, assuring firm,



Bag flattener is available in belt widths from 8 to 24 in

safe stacking or palletizing, and storage in least possible space.

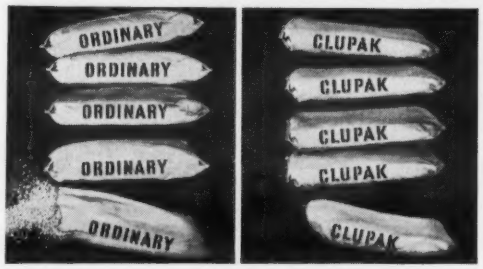
Description: Flattener is a

(*Continued on next page*)

YOUR CLUE TO BETTER MULTIWALL SACKS... EXTENSIBLE CLUPAK PAPER

WIDE VARIETY of products now being shipped in CLUPAK paper multiwall bags includes:

Aluminum sulphate	Perlite
Ammonium nitrate	Pigments
Calcium carbonate	Plant foods
Calcium chlorate	Plaster of Paris
Carbon black	Powdered insecticides
Cement	Pulverized rock
Clays	Polyethylene crystals
Cotton seed meal	Salt
Dehydrated alfalfa	Sand
Feed	Seed
Flour	Soybeans and meal
Fertilizer	Steric acid
Frits	Sugar
Hydrated lime	Sulphate of potash
Meal	Talc
Oyster shells	



DROP TEST comparison demonstrates CLUPAK paper's ability to resist shock. Multiwall sack made with CLUPAK paper (right), survives many more test falls than sack (left) made with ordinary kraft.

ROUGH HANDLING in shipping emphasizes CLUPAK kraft's toughness, ability to stand up where failure often occurs with ordinary multiwalls. Even when new, lighter bag constructions are used, the CLUPAK trademark is your assurance the bag paper meets the most rigid of shipping requirements.

DISCOVERY GIVES PAPER NEW "*TOUGHNESS*" ...MAKES IT ABSORB SHOCKS INSTEAD OF TEARING

BETTER PERFORMANCE, LOWER COST! CLUPAK Extensible Paper opens a new era in paper ... makes it virtually a new material, with unlimited applications. For CLUPAK paper has built-in *stretch* or extensibility which lets it absorb the shocks and strains that cause ordinary paper to rip, tear and puncture. The result is a new dimension in paper — *toughness*. In multiwall sacks, CLUPAK paper toughness delivers far better performance... often at lower cost, by permitting fewer multiwall plies and a net saving in total basis weight. And CLUPAK paper *flexibility* can mean additional advantages — faster filling, easier handling and stacking.

BE SURE TO LOOK FOR THIS TRADEMARK

EXTENSIBLE CLUPAK® PAPER*

*Clupak, Inc.'s trademark for extensible paper manufactured under its authority.

KEY FACTS FOR BUYERS

1 CLUPAK kraft is the same as ordinary kraft except that it is stronger, tougher and more flexible.

2 CLUPAK paper can be made in many basis weights and with varying degrees of stretch. Printability, surface friction, porosity and other properties can be controlled as with ordinary paper.

3 CLUPAK paper toughness and flexibility open up unlimited new uses for paper. Clupak, Inc. carries on continuous research and development work and results are made available to all licensees.

4 CLUPAK, INC. permits the use of its trademark only on paper which meets this company's rigid toughness requirements.

Clupak, Inc., 530 Fifth Avenue, New York 36, N.Y.

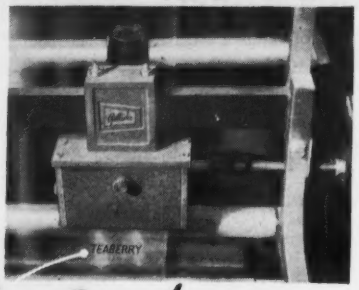
Buy CLUPAK paper and products made with CLUPAK paper from:

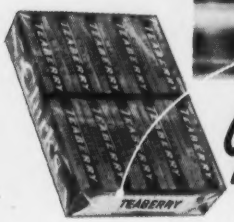
Albemarle Paper Mfg. Co.
Calcasieu Paper Co.
Canada Paper Co. (Canada)
Crown Zellerbach Corp.
Continental Can Company, Inc.
Dynas Aktiebolag (Sweden)
Hudson Pulp and Paper Corp.
International Paper Co.
St. Lawrence Corp., Ltd. (Canada)
St. Regis Paper Co.
Union Bag-Camp Paper Corp.
West Virginia Pulp and Paper Co.

5751 on Reader Service Slip.

New midget imprinter for wrapping machines*

- Fully automatic
- Occupies less than 1 cu. ft.
- Instant drying action prevents smudging





Gottscho Series 700 ROLAPRINTER® attachment Patented

Compact, lightweight, and easy to install yourself, this precision-made unit imprints codes, prices, contents descriptions, block-outs, promotion specials, etc. on cellophane, polyethylene, glassine, foil, paper, waxed paper, etc. Makes accurately registered, consistently uniform impressions up to 4"x6". Foolproof—requires no adjusting or skill to operate. No change parts needed for different cut-offs. Hundreds already in successful use.

*Battle Creek, Campbell, Hayssen, Lynch, Oliver, Package Machinery, Pak-Rapid, Roto-Wrap, Simplex, Wrap-Ade, Wrap-King and others. For Stokeswrap, Mercury Vertipak, Trans-Wrap, AMF and National wrappers ask about our "WRAP-A-PRINTA" attachment.

First and foremost in automatic production-line CODING, MARKING and IMPRINTING machines — Gottscho®

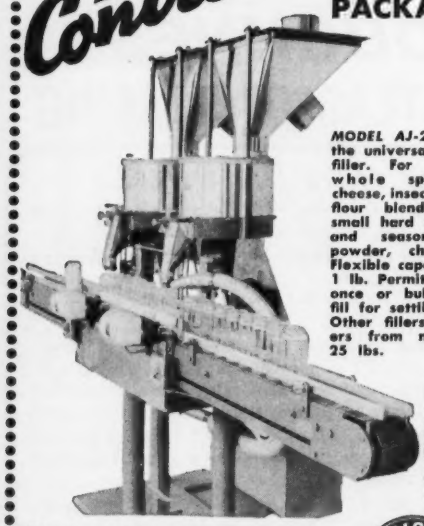
Write today for Bulletin "RIN-7"

GOTTSCHO Dept. V
HILLSIDE 5, N.J.

In Canada: Richardson Agencies, Ltd. • Toronto & Montreal
Booth 712 • PMMI Show • New York • Nov. 17-20

5752 on Reader Service Slip.

Controlled PACKAGING



MODEL AJ-2 PAK KING: the universal dry-product filler. For ground and whole spices, grated cheese, insecticides, drugs, flour blends, cleansers, small hard candies, salts and seasonings, milk powder, chemicals, etc. Flexible capacity: ⅛ oz.-1 lb. Permits filling 2 at once or bulk and finish fill for settling problems. Other fillers and weighers from milligrams to 25 lbs.

Write for Catalog No. 55 describing this and other WEIGH RIGHT low-cost, better-performing tools of packaging.

Models rated from 100 mgs. to 1 lb. at 20-150 or more per minute. PAK KING patented metric flow provides more accurate production compared to weighers, augers or volumetrics.

WEIGH RIGHT Automatic Scale Co.

WEIGH RIGHT AUTOMATIC SCALE COMPANY
JOLIET • ILLINOIS • U. S. A.

5753 on Reader Service Slip.

(*Continued from preceding page*)

belt conveyor with inverted power feeder. Upper belt can be adjusted to desired minimum position above lower belt and several different bag sizes can be flattened without changing this adjustment.

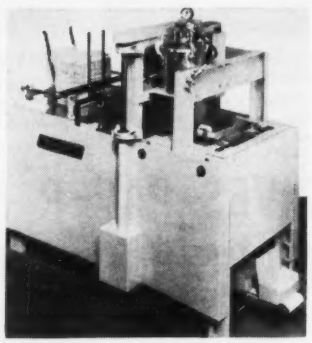
Exact amount of compression required is achieved by adding weight to shelf on upper belt.

(Type 32 Bag Flattener is available from New London Engineering Company, 1700 S. Division St., New London, Wis.)

5754 on Reader Service Slip.

Moderate-speed unit cuts carton-forming costs

Uses: Simply designed tray- and carton-forming machine suits packaging applications where economy and moderate speed (up to 70 per min) are required.



Unit automatically converts low-cost blanks (upper left) into perfectly shaped trays or cartons (lower right)

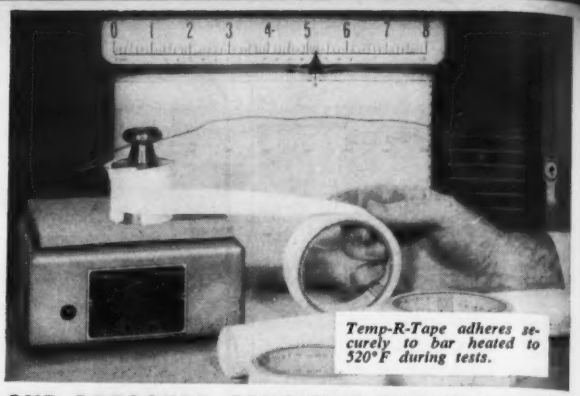
Features: Unit can be automatically converted to handle carton and tray blanks ranging in size from 5 to 22 in. long, by 3½ to 16 in. wide.

Unique feature is closed glue system which completely eliminates costly clean-up time.

Description: Carton or tray blanks are automatically fed from inclined magazine, and a uniform glue pattern is applied to end flaps.

Trays or cartons then are formed, with the glued sec-

(*Continued on page* 86)



Temp-R-Tape adheres securely to bar heated to 520°F during tests.

CHR PRESSURE-SENSITIVE TEFLON* TAPES

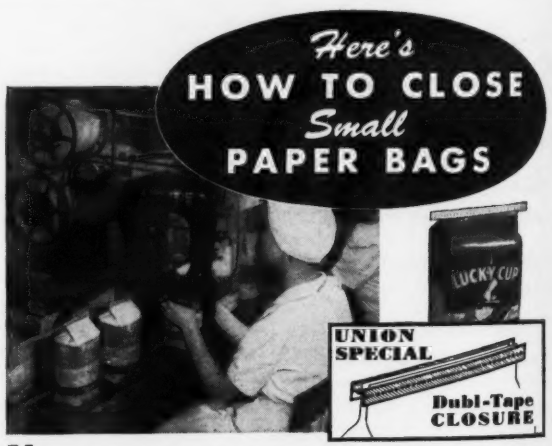
- *—100°F to 500°F applications*
- *Class H and Class C insulation*
- *Non-stick and low friction facing*
- *Chemical resistant facing*
- *Easy to apply*

Temp-R-Tape is available from stock in rolls and sheets. All four types — Temp-R-Tape T; TH; C and TGV — combine some form of Teflon backing with silicone polymer adhesive to provide easy-to-apply pressure-sensitive and thermal curing pressure-sensitive tapes for electrical and mechanical applications. Designed for extreme temperatures, Temp-R-Tapes possess high dielectric strength, low power factor, high elongation, negligible moisture absorption, are non-corrosive and non-contaminating.

FREE SAMPLES and folder — write, phone or use inquiry service.

CHR — *Sold nationally through distributors*
CONNECTICUT HARD RUBBER
*duPont TM — Main Office: New Haven 9, Connecticut

5755 on Reader Service Slip.



UNION SPECIAL'S Style 60000 D bag closing machine, producing the exclusive Dubl-Tape closure, is designed to speed packaging . . . cut costs . . . and improve appearance.

- **FAST**— Speed to match output of standard filling and weighing equipment.
- **NEAT**— Produces an eye-pleasing, sales-stimulating package with high merchandising value.
- **ECONOMICAL**— Operating cost per bag is at a minimum . . . uses inexpensive cotton thread and paper tape.
- **VERSATILE**— Adjustable for a wide range of bag sizes, short or long runs.

Write for BULLETIN No. 100 to get the complete facts on this machine . . . and how it can do a *better* closing job for you.

Union Special MACHINE COMPANY
432 N. Franklin Street • Chicago 10, Illinois

5756 on Reader Service Slip.

GAYLORD PROBES THE UNIVERSE FOR PACKAGING IDEAS

A galaxy of well-equipped Gaylord researchers constantly scans the packaging world, searching out answers to container problems that seem light-years away today.

If you're shooting for the moon in your packaging operation . . . or merely want down-to-earth counsel right now . . . call your nearby G-Man today.

GAYLORD
CONTAINER CORPORATION

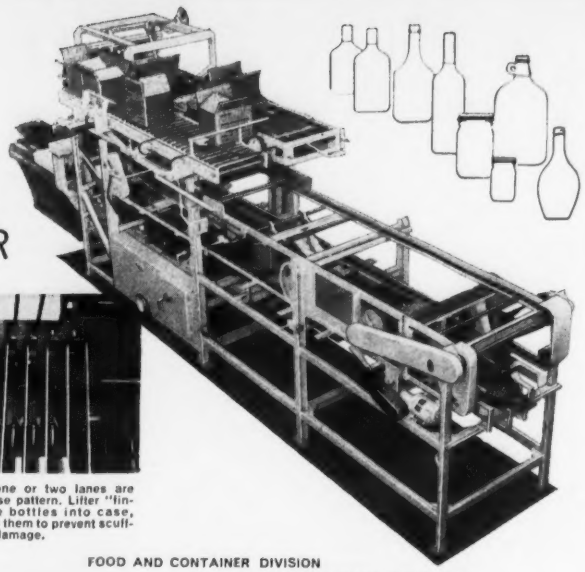
Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

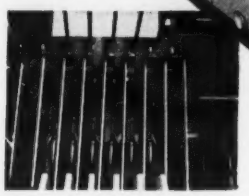
DIVISION OF **Crown Zellerbach Corporation**

For more information on product at right, circle 5757 see information request blank opposite last page.

Case your glass containers gently...
with the
feather-touch bottom loading
BARNES AUTOMATIC CASE PACKER



- no operator required
  —machine runs completely unattended
- eliminates bottle scuffing, "hammer" breakage
- automatically loads case, inserts bottom pad, applies glue, and closes flaps in less space than ever before
- handles half-pints, pints, fifths, quarts, half-gallon and gallon bottles, jugs and flasks—packs all shapes (including narrow neck containers)
- cases as fast as your filling line will feed
- quick change-over from one size bottle or case pattern to another
- the only unit that can case gallon jugs



Bottles from one or two lanes are formed into case pattern. Lifter "fingers" elevate bottles into case, slightly fanning them to prevent scuffing and label damage.

Your nearest Barnes representative can show you a movie of this new caser in action.

FOOD AND CONTAINER DIVISION
W. F. & JOHN BARNES COMPANY
301 South Water Street, Rockford, Illinois

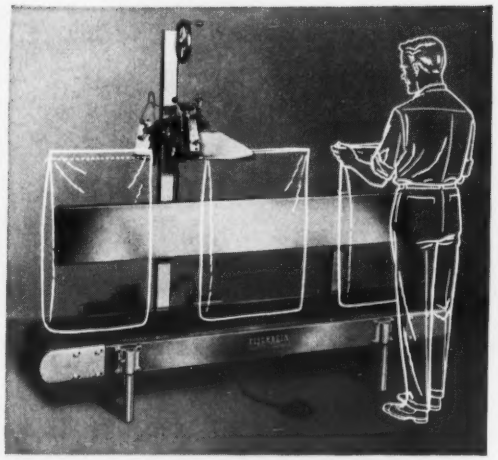
W.F.& JOHN BARNES

SALES REPRESENTATIVES
WILLIAM B. SANFORD, INC.,
601 West 26th Street, New York 1, N. Y.
FOOD EQUIPMENT & SUPPLY CO., INC.,
1808 Second Avenue, P.O. Box 422, Tampa 1, Florida
JAMES Q. LEAVITT CO.,
410 25th Street, Oakland 12, California
CHISHOLM SALES & ENGINEERING CO.,
602 Erie Avenue, Niagara Falls, Ontario, Canada

OTHER EQUIPMENT INCLUDES: BARNES RETORT BASKET LOADER • BARNES RETORT BASKET UNLOADER • BARNES SINGLE FILER
CUSTOM DESIGNED CONVEYORS • PACKING AND PROCESSING UNITS FOR THE FOOD, DRUG AND PROCESS INDUSTRIES

5758 on Reader Service Slip.

FISCHBEIN LOW COST EFFICIENT
BAG CLOSING EQUIPMENT



AUTOMATIC MODEL BA-6
Bags start the sewing operation when they reach the head. After sewing, thread is cut automatically and conveyor belt continues to move bag. Instantaneous start/stop controls.

FISCHBEIN *Portable* BAG CLOSER MODEL C

FASEAL
TAPE BINDING ATTACHMENT
- Produces perfect tape-bound closures.
- Complete portability maintained.
- Can be quickly removed when tape-binding is not required.

- Total weight, only 10½ pounds.
- Requires no installation, supports or plant space . . . merely plug into any electrical outlet.
- Handles all textile and paper bags.
- Closes average 100 lb. bag in less than 6 seconds.

Write for complete Catalog File of Bag Closing Equipment.

DAVE FISCHBEIN CO.
2730 30th Ave. S., Dept. 2A
Minneapolis, Minn., U.S.A.

5759 on Reader Service Slip.

packaging

(*Continued from page 84*)

tions being held securely in position during forming operation to permit glue to set firmly.

Finished cartons or trays are delivered on a moving conveyor, ready for filling.

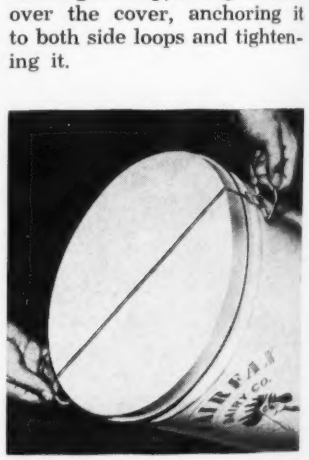
(Model PG tray- or carton-forming machine is manufactured by Peters Machinery Company, 4700 Ravenswood Ave., Chicago 40, Ill.)
5760 on Reader Service Slip.

Seals slip-cover can while leaving side handles free

Design of slip-cover can with side handles provides tamper-proof sealing, while permitting handles to swing free for easy carrying even after can has been sealed.

A small tie loop at base of each handle is feature of new design. (See photo.)

After can has been filled, a slip cover is sealed onto it by running a strap, string or wire over the cover, anchoring it to both side loops and tightening it.



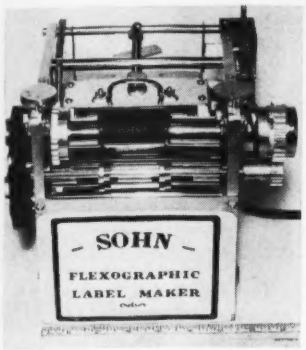
Small loop at base of can handle permits side handles to remain free after can has been sealed

Method replaces taping to reduce packaging costs, while effectively preventing damage due to accidental spillage in transit.

(Combination Tie and Grip Handle is a development of Fein's Can Corporation, 50th St. and First Ave., Brooklyn 32, New York.)
5761 on Reader Service Slip.

Tiniest flexographic press prints, die-cuts labels

Uses: Portable unit prints and die-cuts on pressure-sensitive label paper, or score-cuts on gummed, heat-seal or plain paper. It is equally adaptable to short runs or long runs.



Tiny press is precision-made, rugged, simple to operate

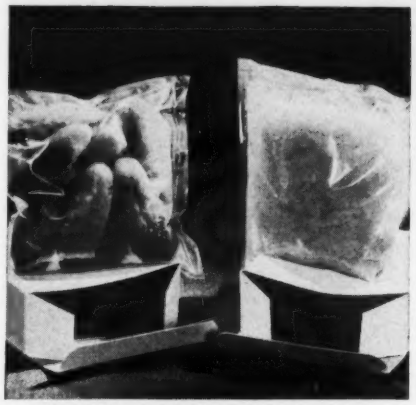
Features-Description: Unit prints 6000 labels per hr with professional quality. Changes in colors and in printing plates can be made in seconds.

Machine dimensions are 9 by 9 by 9 in. (without guard case); weight is only 40 lb. Standard machine produces labels of 3 by 4 in. maximum size. Unit for 4 by 5 in. maximum size labels is available at extra cost.

(Sohn Flexographic Label Maker is manufactured by Sohn Manufacturing, Inc., P.O. Box 87, Plymouth, Wis.) 5762 on Reader Service Slip.

"That size will do for giblets, but what about our whole pack?"

FROZEN FOODS are attractively packaged in envelopes of "Scotchpak". Delicate seasoning is preserved during preparation—since food can be boiled in bag.



PICKLES, SAUERKRAUT and other foods packaged in a brine or broth are pasteurized, packaged, and displayed in compact, lightweight envelopes of "Scotchpak".

VACUUM-PACKED foods stay vacuum-packed in "Scotchpak"! Film has low permeability to air, other gasses and water vapor. Cuts packaging and shipping costs.

"SCOTCHPAK" TAKES OVER

and streamlines a multitude of packaging jobs!

Looking for a film that's *tough*, clear as glass—one you can freeze or boil? And would you like that same film to be heat-sealable with a seal that's as tough as the film itself? Then your answer is "Scotchpak."

Here is a film that combines the best features of many films. It can be heat-sealed in less than 2 seconds—a temperature of 300° to 400° F. and 20-60 psi is all that's required.

"Scotchpak" Film resists freezing cold (down to -70°F.) and boiling heat (up to 240°F.). It resists acids, oils, alkalies and organic solvents. It is light (saves shipping costs!) and compact (saves space in shipping and on the shelf, too!)

"Scotchpak" is now available in roll-stock widths up to 50 inches—from 2 mils to 4.5 mils thick, ready for printing—if you desire. It can be easily handled on conventional bag-making and filling equipment.

Our Customer Service organization is ready to work with you to show you how "Scotchpak" can solve your film fabrication and packaging problems. For complete information, write Film Products Group, Dept. CAH-119, 3M Company, St. Paul 6, Minnesota.

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HEAT-SEALABLE POLYESTER FILM
SCOTCHPAK BRAND

"SCOTCHPAK" IS A REGISTERED TRADEMARK FOR THE HEAT-SEALABLE POLYESTER FILM OF 3M CO., ST. PAUL 6, MINN. EXPORT: 99 PARK AVE., NEW YORK 16. CANADA: LONDON, ONTARIO

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW
3M COMPANY

5763 on Reader Service Slip.

RELIABILITY...

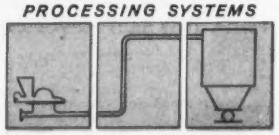
Because the movement of the stars never varies, an astronomer can determine time to the exact second by checking the position of Leo, Orion, or one of the other constellations that appear in the night skies. That's *reliability* — a word that has become a motto for Mikro-Products. Serving the rapidly growing processing industries, our reputation rides on the performance of the equipment we manufacture . . . good reason why our standards are high . . . good reason why Mikro grinding, conveying and dust collection units are built to put greater efficiency and economy into our customers' operations. If you'd like to know more about Mikro-Products . . . about Mikro quality and reliability, the information is yours on request, and without obligation.

See our exhibit — 27th Exposition of Chemical Industries, New York Coliseum, Booth #632

MIKRO-Products

SPAN THE GLOBE

PROCESSING SYSTEMS



GRINDING CONVEYING COLLECTING

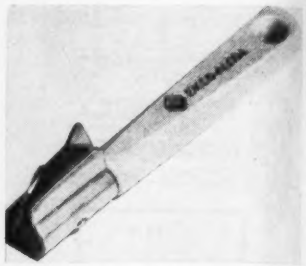
Pulverizing Machinery Division • Metals Disintegrating Company, Inc.
63 Chatham Road • Summit, New Jersey

REPRESENTATIVES throughout the United States, Continental Europe, British Isles, Canada, Mexico, Central and South America, West Indies, South Africa, India, Japan, Philippines, Australia and New Zealand.
MANUFACTURING FACILITIES: United States, Canada, Continental Europe, British Isles.

5764 on Reader Service Slip.

Easy, quick hand closure for foil containers

Uses: First hand closure tool for vertical flange aluminum foil containers has wide variety of applications in the bakery, restaurant take-out, confectionery and other small-user markets.



Tool applies a tight closure with minimum effort

Features: New tool rapidly and efficiently crimps plastic and board covers to vertical flange containers. Round and rectangular shaped containers are closed with equal ease.

Description: Flange of the container is inserted between the jaws of the 5¾-in.-long tool and either container or tool is rotated until the closure is complete.

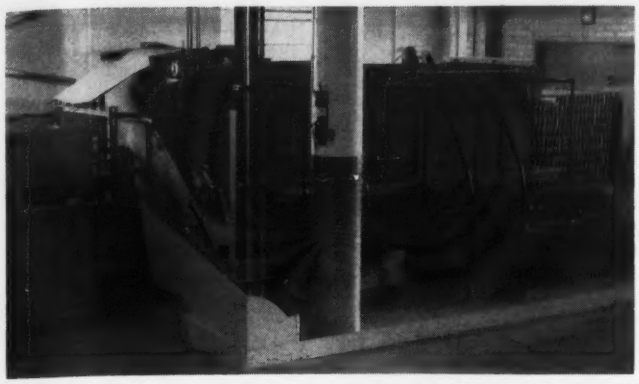
(Hand closure tool is available from Ekco-Alcoa Containers Inc., Wheeling & Hintz Roads, Wheeling, Ill.)
5765 on Reader Service Slip.

Cut variations in fill

Nuclear bulk density gage cuts variations in packaging fill by 2/3 — offers savings on product giveaway of over $200 per day per filling machine. **See page 107.**

Checkweigh packages

For checkweighing machine which automatically weighs, classifies and segregates packages at speeds up to 400 per minute, see page 109.



Unattended depalletizer removes fiber separator (top left) from palletized cans, deposits it in fork-truck bin at left for re-use

Depalletizes cans — unattended

No operator needed to cycle each layer or remove fiber separators in bulk can loads

Problem: Push-button depalletizing of empty cans was a big step toward reducing can handling costs when introduced a scant three or four years ago.

Burgermeister Brewing Company, San Francisco, wanted to go a step further. As far as possible, they desired unattended depalletizing, to fit into their high productivity goals.

Solution: Consequently, they installed the first model of an automatic depalletizer which moves pallet-loads of empty cans into place, and sweeps off each layer of cans successively, at the same time automatically stripping off the fiber separator from each layer.

Machine places fiber separators in stack for return to can supplier for re-use.

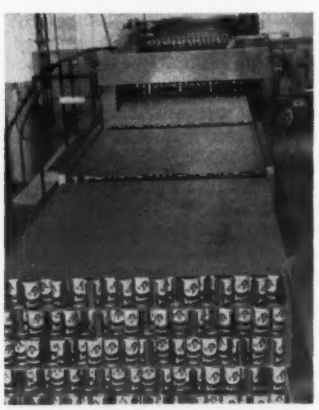
Quick truck unloading

Here's how the unit fits into Burgie's can-handling system: Cans are palletized on four-way pallets (44" x 56") at factory, shipped by truck to Burgie's dock. Permanent in-truck roller conveyors mesh with Burgie dock roller conveyors, so that truck is easily unloaded in a few minutes whether fork truck is available or not.

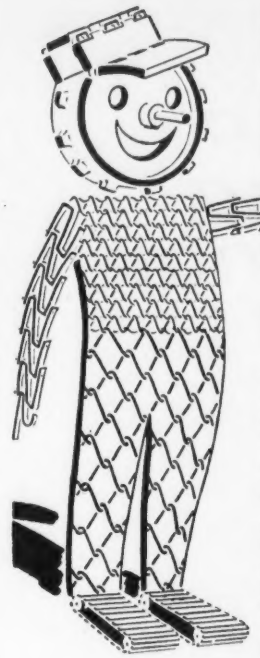
Lift trucks then fork the pallet-loads from side, deposit them on roller conveyors leading to reciprocating lift (automatic elevator).

Pallet-loads are raised to

(*Continued on page* 100)



Formerly, unit operated by push-button, with man to remove separators from each layer



MAIL THIS COUPON

Cyclone Fence, American Steel & Wire
Dept. K119, 614 Superior Avenue, N.W.
Cleveland 13, Ohio
Please have your trained representative call on us to discuss our production problems.

Name_____
Company_____
Address_____
City_____ State_____

To Whom money May Concern:

If your production costs are higher than they ought to be, you very likely can do something about it. Often one change in a method or process can make the difference between loss and profit. We'd like a chance to consult with you and see if such a change in method won't improve *your* profit picture. (It certainly has paid off for many other firms). The best part is, that it won't cost you one cent to find out. Just clip the attached coupon and mail it. When you do, one of our trained conveyor belt representatives will visit you to discuss and examine your particular problem and offer suggestions that will show you how Cyclone Metal Processing Belts may cut your production costs below the ulcer level. These suggestions will be tailored to YOUR problem . . . and no obligation. How can you lose? Do it, today. *USS and Cyclone are registered trademarks*

Cyclone Fence Dept.
American Steel & Wire
Division of
USS United States Steel

Manufactured at Waukegan, Ill. and Oakland, Calif. • Sales Offices, Coast to Coast

5766 on Reader Service Slip.

MEYER MACHINE COMPANY

P. O. Box 5096 - PErshing 4-5151
3528 Fredericksburg Road
SAN ANTONIO 1, TEXAS

Meyer Bucket Elevators handle bulk materials without breakage, damage, locking or jamming. The design of the intake prevents materials from dropping into elevator boot, thus eliminating production loss for clean-out. Positive discharge prevents intermixing of materials when more than one product is run in the same elevator. Manufactured of heavy guage steel throughout, these elevators give long, trouble-free service. Available in any height or capacity.

Also available with Geared Motor Drive

- SAFE
- GENTLE
- EFFICIENT

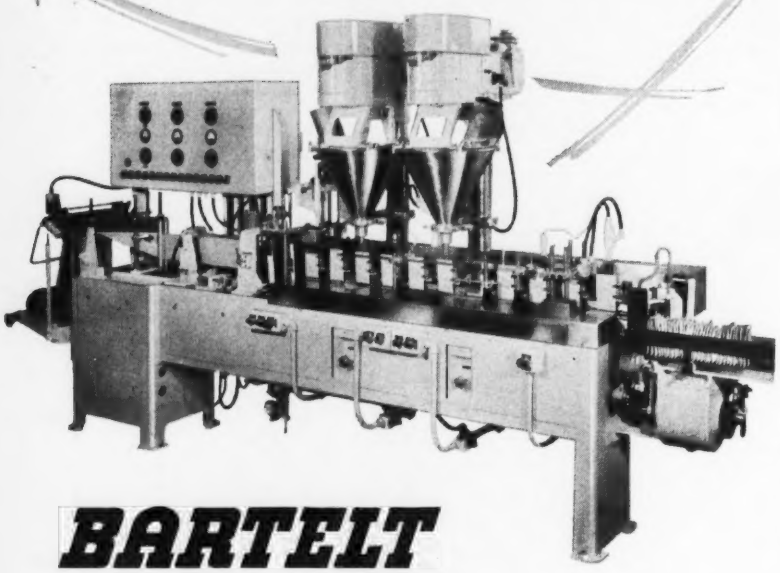
Chain tensioning units automatically compensate for normal wear or stretch of heavy duty chain. Buckets are of aluminum or stainless steel. Sealed, self-aligning ball-bearings throughout.

Write for Bulletin 812

MEYER BUCKET ELEVATORS

5767 on Reader Service Slip.

ENGINEERED PACKAGING PROTECTION



BARTELT

Packaging Machinery Has Built-in Versatility to Meet Changing Market Requirements . . .

PROTECTION . . . for changing package sizes and products. The Bartelt Packager can be tooled to handle a variety of products and a wide range of package sizes.

PROTECTION . . . for your product. Pouches can be made from inexpensive webs or the finest barriers depending on product shelf-life requirements.

PROTECTION . . . against high labor costs. Completely automatic from roll stock to finished package.

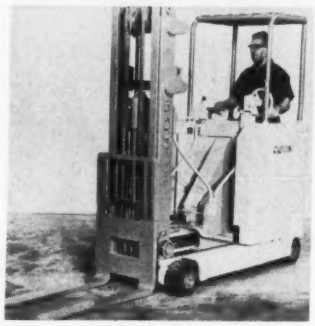
PROTECTION . . . against maintenance problems and excessive down-time losses. Bartelt's straight-forward design and rugged construction assure efficient operation.

● **Write Today for Bartelt Brochures**

BARTELT ENGINEERING COMPANY
1900 Harrison Ave., Rockford, Ill. • New York Office: 370 Lexington Ave. N.Y.C.

5768 on Reader Service Slip.

New Developments in fork lift trucks



Petite powerhouse . . .

. . . this reach-type stand-up electric fork truck is only 36-in. long (from rear of load) and 38 in. wide, yet does the job of a full-size counterbalanced fork truck.

Truck can stack 48-in.-long, 4000-lb loads at right angles in a seven-ft-wide aisle. Lifting speed is 33 to 70 fpm.

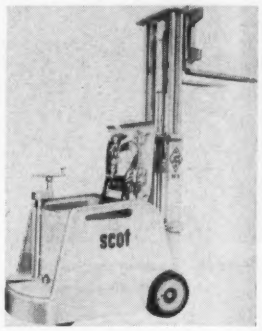
Forks and upright reach 36 in. when hydraulic extension mechanism is actuated. When upright is retracted, center of gravity of a 48-in.-long load is brought behind the front wheels — providing ample traction for accelerating, braking or climbing grades to 15 per cent.

Dual drive axles — first on this type machine — permit six mph forward speed with full load, assure traction for ramps and bridgeplates and for braking, provide stability for high-tiering.

Battery life is prolonged by use of only half the battery when truck is driven at quarter-speed. Special circuitry arrangement equalizes battery usage by alternately using opposite halves.

Many design innovations are aimed at providing driving ease and safety. These include hand-controlled power brakes and a set of auxiliary controls so mounted as to allow driver to control vehicle comfortably and with complete visibility during backing-up operations.

(NR-40 reach-type narrow-aisle electric fork truck is manufactured by Clark Equipment Company, Industrial Truck Division, 1921 Escote St., Battle Creek, Mich.) 5769 on Reader Service Slip.



Flip-top maintenance . . .

. . . affording immediate access at eye level is plus feature of new stand-up electric. All hydraulic and electrical control mechanisms are mounted on under side of top cover.

Turning radius is 52 in., steering is a full 360 degrees, or 170 degrees with removable stop. Other advantages include positive traction with or without load on grades up to 20 per cent, programming speed control, "anti-plugging," restricted load lowering, dead man pedal, unitized balanced construction.

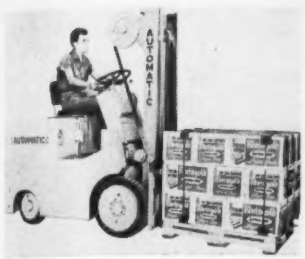
Travel speed loaded is six mph with 36-v battery; lift speed loaded, 43 fpm; lowering speed with load, 52 fpm.

("Scot" electric fork lift truck, available in 3000-lb capacity as Model M-3, and in 4000-lb capacity as Model M-4, is manufactured by James Campbell Smith, Inc., 4057 Erie St., Willoughby, Ohio.) 5770 on Reader Service Slip.

Battery savings to 60% . . .

are realized during short-haul and maneuvering operations using trucks equipped with advanced new "Current Miser Control."

Battery will yield two work shifts without recharge, in place of only one shift previously. Or, a smaller, less expensive battery (and hence a smaller, more maneuverable truck) can handle the job that



now requires a much larger battery.

Current Miser Control uses a compound motor composed of three basic elements: armature, two sets of series fields and one set of shunt fields. For low-speed driving, all series and shunt fields are employed.

As truck picks up speed, part of series field is cut out and, at top speed, all of shunt field also is cut out. Speed range, from low to top speed, is infinitely variable.

("Current Miser Control" — available on Skylift Model ELF electric industrial rider trucks in 3000- to 10,000-lb capacities — is development of Automatic Transportation Company, Division of The Yale & Towne Manufacturing Company, 149 W. 87th St., Chicago 21, Ill.)
5771 on Reader Service Slip.

Industrial batteries . . . how to care for them

Technical instructions and engineering data on care of motive-power storage batteries is presented in 36-page handbook.

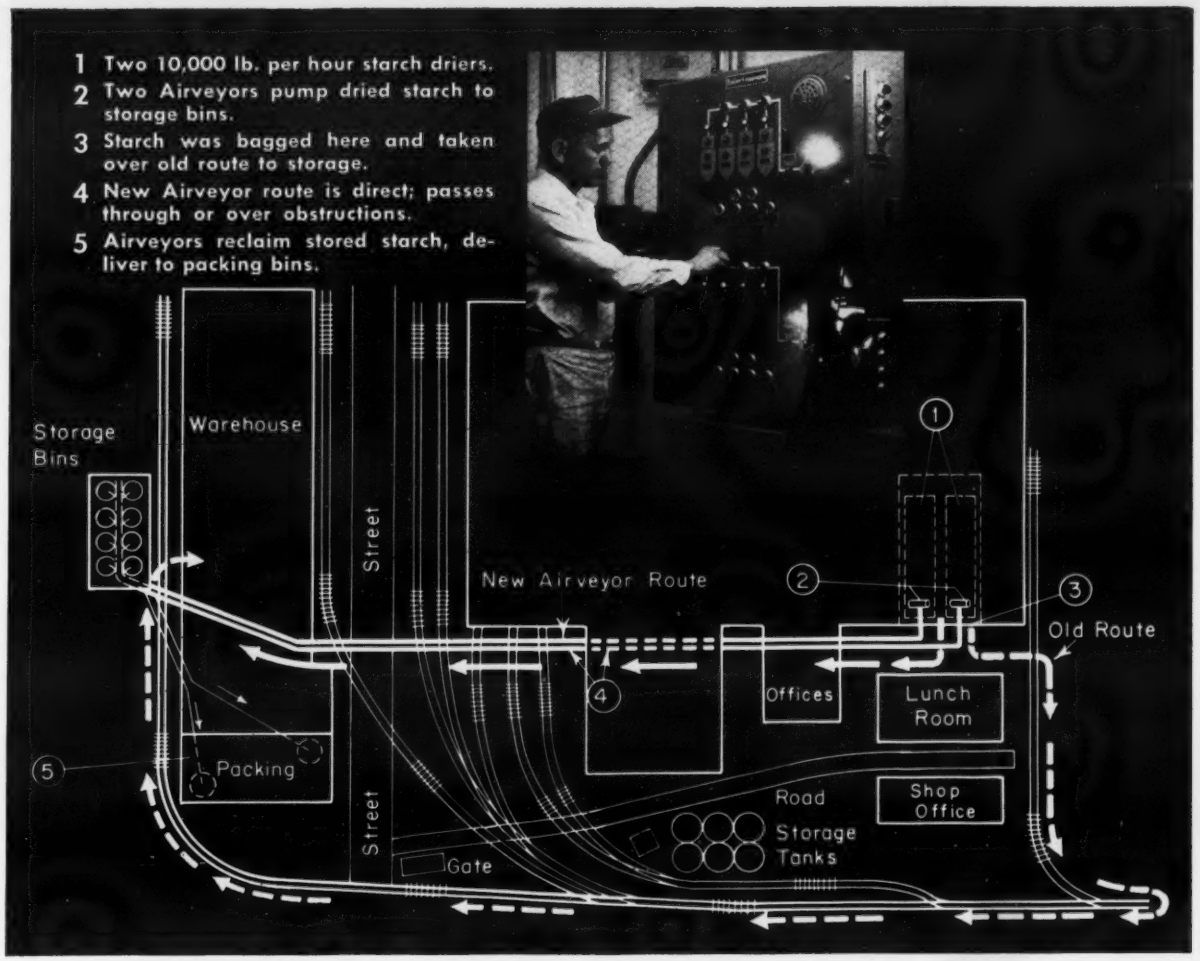
Pocket-size book is divided into three main sections: theory, general instructions and maintenance.

Drawings clearly illustrate and explain theory of charging and discharging batteries.

Such topics as placing batteries in service, operation and charging are covered in detail.

Well-illustrated maintenance section contains instructions for most general repairs. Included are such jobs as replacing jars, covers and separators. Installing, repairing and charging of plugs and recep-

(*Continued on next page*)



PLANT MODERNIZATION THROUGH PNEUMATIC CONVEYING

FULLER pneumatic conveying system increases production without plant expansion

To increase production, the Union Starch and Refining Company's Granite City, Ill., plant first needed to expand their materials handling system. But a complete revamping of bagging and warehouse operations was impossible because there was no space available for necessary new buildings.

An Airveyor® System, engineered and built by Fuller, was the answer. Airveyor's extreme flexibility allowed it to be set up through walls, along sides of buildings, over streets, on roofs and up inclines. At Union Starch, the total distance covered is 800 feet, with a number of 45 degree and 90 degree bends in the line.

The Fuller Airveyor system transports the starch in two phases, from the driers to the storage bins and from the bins to receiving hoppers over the bagging machines. Flow is controlled automatically through control panels located in the drier room and at the bagging machines. Other controls are also provided at the panels for automatic operation of components such as feeders, blowers, conveyors and filter-receivers.

Besides being easily installed and automatically controlled, the Fuller system reduces both the amount and the expense of handling. Additional savings are made possible by Airveyor's self-cleaning facility, which greatly reduces maintenance costs.

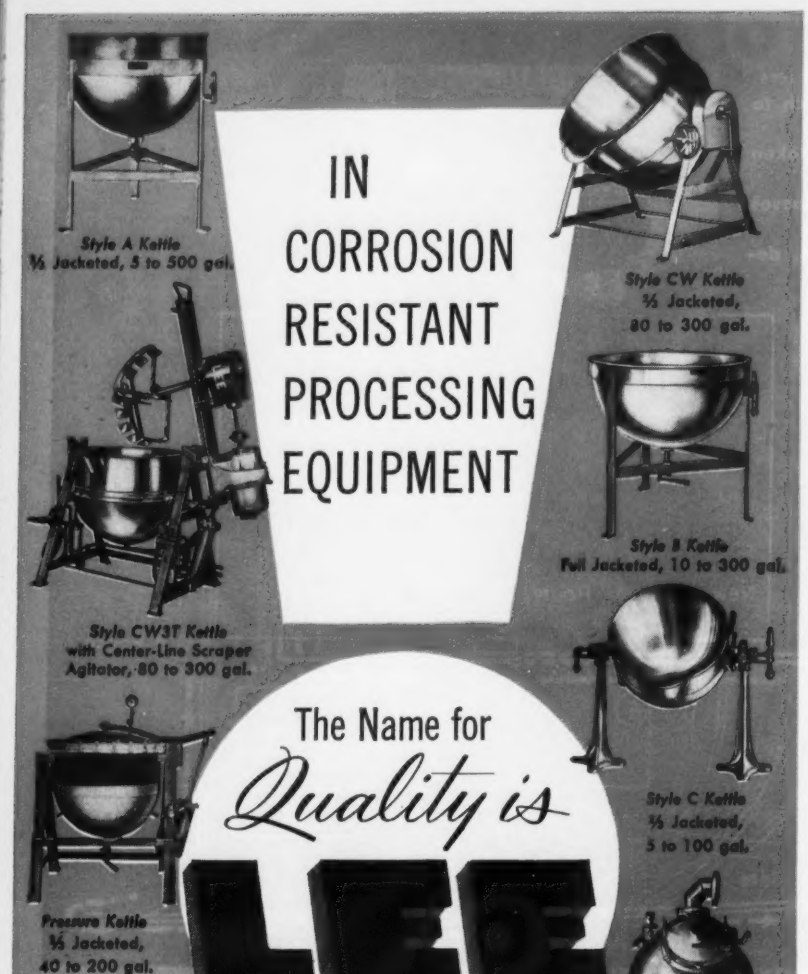
Why not work with Fuller to design an automated pneumatic materials handling system that will help you cut costs and increase production? Write today for complete details. A-280 1355

FULLER COMPANY GENERAL AMERICAN TRADE MARK

FULLER COMPANY
176 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
Birmingham • Chicago • Kansas City • Los Angeles • New York • San Francisco • Seattle

Fuller
pioneers in harnessing AIR

5772 on Reader Service Slip.



LEE
METAL PRODUCTS COMPANY, INC.
A.S.M.E.
CODE CONSTRUCTION

414 PINE STREET, PHILIPSBURG, PA.

5773 on Reader Service Slip.

material handling

(*Continued from preceding page*)
tacles also are presented.

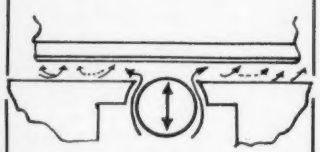
("Instructions & Maintenance Data," Bulletin GB-1896, is available from Gould-National Batteries, Inc., Trenton 7, New Jersey.)
5774 on Reader Service Slip.

CORRECTION!

. . . to article in October FOOD PROCESSING . . . page 60

. . . 'Float' Cargo over Floor on Cushion of Air!

In last month's article on Douglas Aircraft Company's newly developed "pneumatic floor," the line drawing illustrating the operating principle was inadvertently run upside-down.



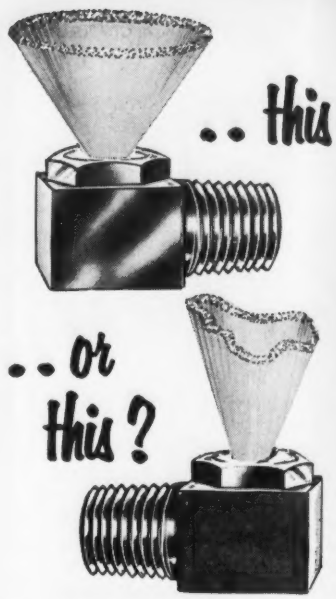
The drawing, here shown correctly positioned, reveals how pressure of sliding pallet bottom depresses one of the many ball-check valves in the pneumatic floor, permitting air to escape through the orifice and literally "float" the heavy load on a cushion of air.

Rebuilt . . . like new

When industrial trucks are worn to point where they no longer provide economical service, they should either be replaced or rebuilt.

Available for all models of this manufacturer's line, the bulletin describes economies and advantages of truck rebuilding.

("Truck Rebuilding Program," Bulletin No. B-546, is available from The Elwell-Parker Electric Company, 4205 St. Clair Ave., Cleveland 3, Ohio.)
5775 on Reader Service Slip.



BE SURE OF A PERFECT CONICAL SHAPE SPRAY ALL THE TIME WITH *Monarch*

For a perfect spray, many food processing plants prefer Monarch nozzles.

This advanced design nozzle reduces clogging and guarantees dependable food processing applications to . . .

- **WAX FRUITS**
- **RINSE VEGETABLES**
- **POWDER MILK**
- **DRY EGGS**
- **WASH FILTER CAKE**
- **HUMIDIFY BANANA ROOMS**

Send for Catalog 1

Monarch
MFG. WORKS, INC.
3401 GAUL STREET
PHILADELPHIA 34, PA.

5776 on Reader Service Slip.

Salt unloads readily when trailer body is hydraulically tipped to angle of 40 to 45 degrees. Air vibrator installed on frame assures complete unloading

First bulk salt trailer . . .

Pneumatically delivers 15 tons of salt in less than hour

Fast, clean, one-man pneumatic delivery of bulk salt is made possible by newly developed aluminum trailer that holds a 19-ton payload (legal loading), and can deliver at rates of up to 20 tons per hr.

First large-scale application of bulk trailer is in delivering salt to Morrell-Felin Company, Philadelphia — packing-plant subsidiary of John Morrell & Company.

This firm processes approximately 1800 hogs per day — averaging out to almost 400,000 lb of pork daily.

Brine requirements are accordingly high, and every 10 days the trailer delivers an 18-ton payload of bulk salt. Unloading, accomplished in less than an hr, is into a 20-ton stainless steel tank in basement of plant.

Once filled with salt, tank is covered with water. As needed, the full-strength brine is taken out via a trough along bottom of tank, and pumped to a stainless steel mixing tank. Thence, by means of selector valves, it is sent to various departments for use.

Prior to the bulk truck development, salt was received daily in bags. Tremendous storage areas had to be set aside, and bags had to be laboriously hand-dumped into the tank.

The new system has released valuable floor space, made inside plant labor for salt unloading unnecessary and turned a difficult, time-consuming task into a fast, clean, simple operation.

Interior of the pneumatic

(*Continued on next page*)

Airlock feeder at rear of trailer is controlled by a hydraulic motor which is powered by tractor power take-off

Life in these excited states...

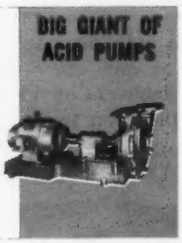
"So you've got some leaks . . . look, new pipe costs money!"

Troubles coming in waves? Try Ace-Ite pipe

Ace-Ite Plastic Pipe . . . a tough, chemical-resistant ABS rubber-resin blend . . . is the surest way to stem the tide of corrosion. One of eight types of Ace pipe, it's ideal for general use, handles most chemicals. It's been around long enough so we know what it'll do. And you'll like the price. *Ask for Bulletin CE-80.*

Ace chemical-resistant rubber-lined steel pipe best for high-pressure, big sizes, or abrasives. Pipe, fittings and valves 1½ to 24".

Highly efficient *WE* pump. Capacity to 360 gpm. Cast iron, fully protected by top quality, chemical resistant hard rubber lining.



Design assistance and facilities for molding special fittings, pump parts, etc., of plastics or hard rubber. Also large hand-fabricating facilities.

Variety and quality to match *any* plastic piping. Riviclor PVC, Ace-Ite rubber-plastic, Parian poly, Ace Saran, Tempron high temperature nitrile, hard rubber-lined steel.

ACE processing equipment of rubber and plastics

AMERICAN HARD RUBBER COMPANY
DIVISION OF AMERACE CORPORATION
Ace Road • Butler, New Jersey

5777 on Reader Service Slip.

NOW ..."custom plan" your conveyor system with Standard

HANDIDRIVE

and Standard units for complete belt, "live" roller and gravity roller set-ups

Handidrive conveyors are made up of pre-engineered standardized units, such as drives, take-up units, end roller assemblies, intermediate framework, supports and hangers.

Easy to engineer and install . . . at low cost

Convert your present gravity conveyors to *power* belt conveyors — inexpensively and quickly — with Handidrive units.

You can assemble and build a system "custom-planned" to suit your individual needs with Handidrives and other Standard units available out of stock. This service enables you to adapt and change the system from time to time to meet varying requirements as they arise, at exceptionally low cost.

Handidrive conveyors may be individually leveled or inclined. Independent units may be purchased separately to construct power conveyors as desired.

Let Standard show *you* how to build or convert your own conveyor systems with Handidrives. Write: STANDARD CONVEYOR COMPANY. General Offices: North St. Paul 9, Minn.

Handidrive may be mounted at center or end. Standardized units may be purchased individually for extension to present conveyors, or as complete conveyors.

Ask Standard how to cut costs with conveyors

Send for Handidrive Bulletin No. 64. Write Dept. Q-11.

Standard

OVER 50 years of conveyor experience

GRAVITY & POWER CONVEYORS

Sales and Service in Principal Cities

5778 on Reader Service Slip.

(*Continued from preceding page*)

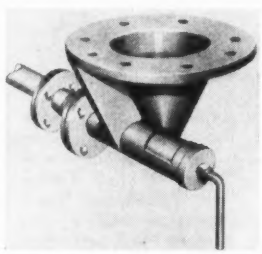
bulk truck is absolutely smooth, with no pockets or recesses for product hang-up. Baffle arrangement inside insures that all material collects in an aluminum hopper welded into the floor.

The air system utilizes a positive-displacement blower mounted on the tractor, and powered by the power take-off. Hydraulic hoist operates in the same manner.

(Aluminum trailer for pneumatic delivery of bulk salt is manufactured by Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pa.)
5779 on Reader Service Slip.

Material intake valves for high-vacuum systems

Thorough mixing of air and material to insure smooth, non-clogging flow is offered by new material intake valves for use with all types of high-vacuum pneumatic systems.

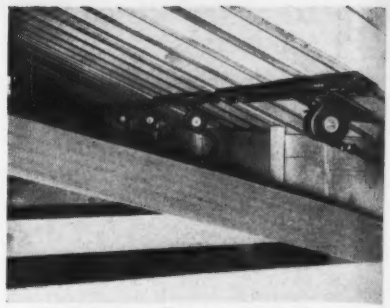


Valve insures proper pneumatic pick-up of dry, free-flowing, powdery or granular materials

While air is flowing, rate of material intake can be adjusted. A separate air inlet protects connected equipment from exposure to full suction of the vacuum system.

The new valves are suitable for use on two-in. through six-in. pipe lines, and rapidly install on any bin, hopper or dust collector.

(New material intake valves for high-vacuum pneumatic systems are manufactured by U.S. Hoffman Machinery Corporation, Air Appliance Division, 103 Fourth Ave., New York 3, N.Y.)
5780 on Reader Service Slip.



AiroViber installation is simple, low-cost.

Keep bulk materials MOVING!

Gain Quiet, Efficient Materials Movement and Low-Cost, Maintenance-Free Operation with AiroViber Vibrators!

Wherever you load, unload, move, package, process, grade or separate bulk materials, you can keep them MOVING with simple, ball type, pneumatically-operated AiroViber Vibrators!

- Start without fail.
- Trouble-free — only one moving part.
- Completely uneffected by surrounding conditions or temperatures.
- No lubrication needed.
- No periodic maintenance required.
- Speed is controlled by air valve.
- Amplitude can be altered.
- Where explosive conditions exist bronze balls may be used.

Steel ball (only moving part) rolls on hardened, ground track.

WRITE TODAY for full information!

VIBER COMPANY 726 S. Flower St. Burbank 56 California

VIBER CO

Pioneers and leaders in the manufacture of

VIBRATORS

5781 on Reader Service Slip.

Personalities, Companies

Kal Kan Foods, Inc.

Los Angeles, manufacturer of premium quality dog and cat food, has promoted Robert J. Scherner to vice president in charge of production. His duties include production supervision of Packers Canning Corp., Los Angeles, and Exportpak, S.A., of Chihuahua, Mexico — both Kal Kan affiliates.

General Foods Limited

Toronto, GF's Canadian subsidiary, has acquired Hostess Food Products Limited, Preston, Ont., leading Canadian producer of quality potato chips.

William Underwood Company

Watertown, Mass., the nation's oldest manufacturer of canned foods, has purchased Richardson & Robbings Company, Dover, Del., also a pioneer producer of quality foods, including boned chicken, chicken fricassee, chicken a la king, chicken broth, egg noodles and chicken, and fig and plum puddings.

Wesson Oil & Snowdrift Co., Inc.

is building a new, high-purity hydrogen plant at Memphis, Tenn. Scheduled to go on stream late this winter, the plant will produce 325,000 cu ft per day of 99.6 purity hydrogen.

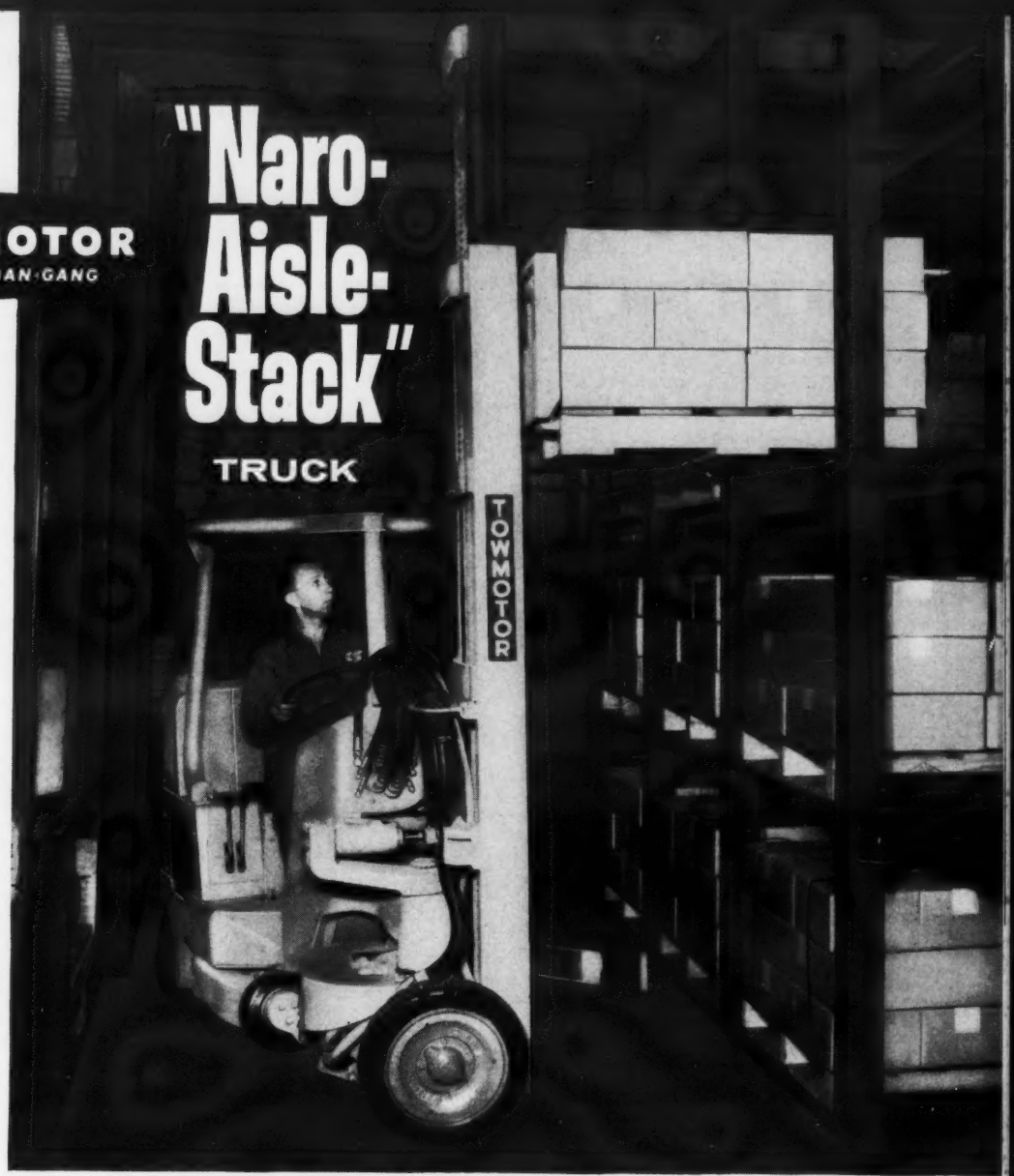
Paul-Lewis Laboratories, Inc.

Milwaukee, manufacturers of enzyme products for the dairy, food and fermentation industries, has organized a new Special Products Division within its Research Department.

For more information on product at right, circle 5782 see information request blank opposite last page.

TOWMOTOR
THE ONE-MAN GANG

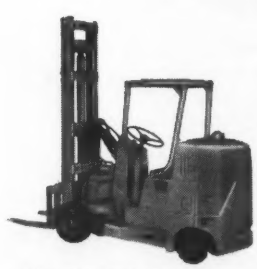
"Naro-Aisle-Stack" TRUCK



Increases storage capacity up to 35% . . . gives you an "extra warehouse" free

Stacks either side in 6-foot aisles...

Newest idea in fork lift trucks!



...also performs like standard lift trucks

The "Naro-Aisle-Stack" series is a Towmotor "first" that offers an entirely new mass handling technique in fork lift truck operation.

Equipped with hydraulically operated outriggers, Towmotor "Naro-Aisle-Stack" trucks perform right and left angle stacking in aisles 6 feet wide, or from four to six feet narrower than lift trucks usually require.

In addition, they also perform all of the functions of a regular fork lift truck. They pick up and lift heavy loads at speeds of 70 feet per minute. Their built-in maneuverability and pivot-action make it possible to operate in congested storage areas and turn sharp corners with the agility, safety and comfort only a sit-down type truck offers.

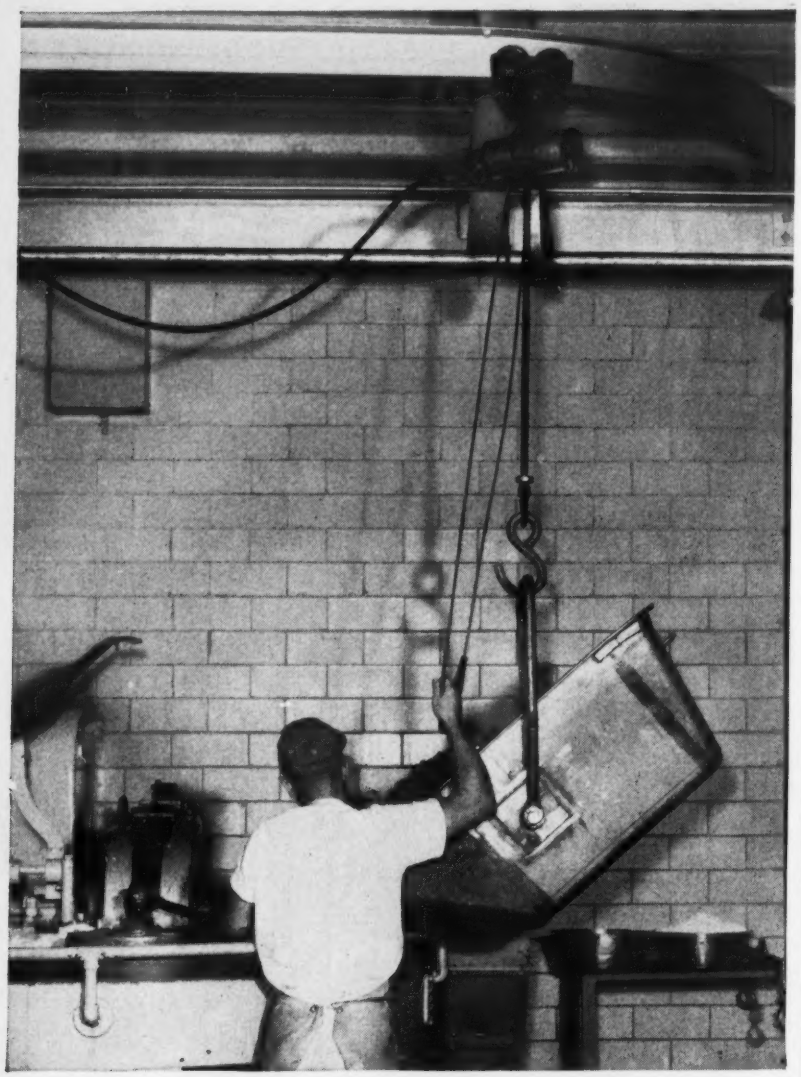
The new Towmotor "Naro-Aisle-Stack" truck is made possible only by the use of the exclusive Towmotor Towmostatic Drive — the drive that eliminates the clutch, the transmission, the drive line, the differential and all shifting mechanism. It's a brand new idea in fast, efficient materials handling.

For complete information, write Towmotor Corporation, Cleveland 10, Ohio, and ask for folder No. F-37.

TOWMOTOR THE ONE-MAN GANG ® -GERLINGER

LEADERS FOR 40 YEARS IN BUILDING FORK LIFT TRUCKS, CARRIERS AND TRACTORS

Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation



One-hand command
speeds meat processing

Charging a 500-lb.-capacity silent cutter and mincer, this man easily and quickly spots heavy stainless steel bucket in position—*in a matter of seconds.* He controls load with one hand—½-ton Gardner-Denver air hoist does *all* the work.

This is only one of a complete line of Gardner-Denver air hoists (from 150-lb. to 2-ton capacity). They all give you the swift, safe lift you need. And they all have a sealed-in, air-powered motor that resists dirt, dust, heat and moisture. Write for Bulletin 86-1.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

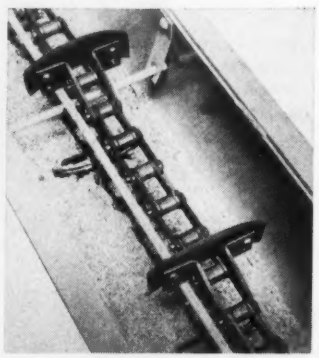
5783 on Reader Service Slip.

Fully enclosed, self-cleaning

Flight conveyor

Uses: Conveyor can handle free-flowing, granular, non-abrasive bulk materials in horizontal or limited incline paths, and is ideally suited for conveying cereals, feeds, grains and similar products.

Features: Several different materials, or several different grades of same material, may be handled successively in same conveying unit, because conveyor's flights match trough contour to insure effective cleaning action and prevent contamination.



Return strand of chain is carried on double-rod guide bars through upper portion of trough —providing proper tracking and minimizing material collection at this point

Description: Conveyor consists of a single strand of combination chain carrying spaced flights, operating within a covered conveyor U-trough.

Material moves along the trough in a uniform, continuous flow — discharging at end of trough or at intermediate points.

Flights consist of flexible, nonmetallic material stiffened by steel plates which are bolted to chain attachments.

Troughs are available in standard heavy steel, stainless steel or special metal construction, and are supplied with removable covers.

Various types of discharge

HOLZ

RUBBER CONVEYOR CLEATS

INSTALL IN A JIFFY . . FOR LOW-COST SERVICE!

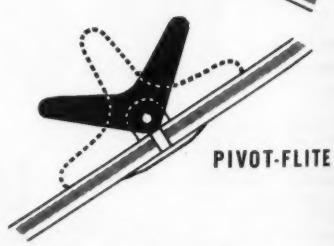
A few minutes, a punch and a screwdriver—are all you need to install efficient rubber lift-cleats for your conveyor system. Install them without removing the belt! There's a style for your particular need, too!

HOLZ Bolta-Flite cleats bolt solidly to chain, fabric or metal systems, for long term **heavy-duty** lifting power at minimum cost.

HOLZ Pivot-Flite, for medium and light duty, hinge on stainless steel pins—attach to belt with patented rubber fasteners to relieve stress when passing over small diameter pulleys; increase belt life!

HOLZ also offers **Vulca-Flite** cleats, permanently vulcanized to belt covers to your specification. Side flanges and special belt attachments available.

Whatever your product, there's a precision-made HOLZ rubber cleat to handle it with firm, yet gentle care. Get the full story: write for details today!



"If it's rubber we can make it!" ...serving industry for a quarter-century

HOLZ
RUBBER COMPANY, INC.
1133 SOUTH SACRAMENTO STREET, LODI, CALIFORNIA
Dealer inquiries solicited.

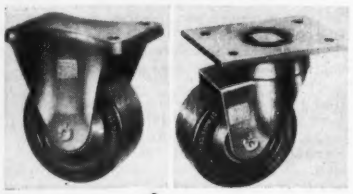
5784 on Reader Service Slip.

can show *You* **the way to greater economy**

NEW MANUAL

This FREE DARNELL MANUAL should be in your files — it describes over 4000 types of casters and wheels and will quickly help you solve every caster and wheel problem

Send For Your Copy Today



here's why

DARNELL
CASTERS & WHEELS
save money

1. **RUBBER TREADS . . .** a wide choice of treads suited to all types of floors, including Darnelloprene oil, water and chemical-resistant treads, make Darnell Casters and Wheels highly adapted to rough usage.

2. **RUST-PROOFED . . .** by zinc plating, Darnell Casters give longer, care-free life wherever water, steam and corroding chemicals are freely used.

3. **STRING GUARDS . . .** Even though string and ravelings may wind around the hub, these string guards insure easy rolling at all times.

4. **LUBRICATION . . .** all swivel and wheel bearings are factory packed with a high quality grease that "stands up" under attack by heat and water. Zerk fittings are provided for quick grease-gun lubrication.

Look in the **YELLOW PAGES** under **CASTERS**

DARNELL CORPORATION, LTD.
DOWNEY (LOS ANGELES COUNTY) CALIFORNIA
37-28 SIXTY-FIRST ST., WOODSIDE 77, L. I., N. Y.
36 NORTH CLINTON STREET, CHICAGO 6, ILLINOIS

5785 on Reader Service Slip.

spouts and gates can be supplied.

Numerous drive arrangements available include Link-Belt fluid drives for smooth starting of heavy loads and Link-Belt P.I.V. drives which provide infinitely variable speed control to regulate rate of material flow.

Head and tail shafts rotate in Link-Belt sealed, self-aligning ball bearings.

("Flite-Flo" conveyors are manufactured by Link-Belt Company, Prudential Plaza, Chicago 1, Ill.)
5786 on Reader Service Slip.

FOOD PROCESSING HANDBOOK

Bulk Flour Savings

In the Handbook article on Conveying Flour by Air, written by John Fischer (FOOD PROCESSING, September, 1959), the statement is made that ". . . bulk flour is available at approximately 20¢ less per hundredweight . . ."

By itself, this statement needs qualification as the following letter to a miller indicates:

Words can sure get a man in trouble! You are most certainly correct in saying that the specific savings in purchase price of bulk flour vs. bag flour is equal only to the cost of the bag, or approximately 13c.

I didn't mean to imply that there is an automatic 20c per cwt savings for the baker buying flour in bulk. What I meant to say is that the average bakery can save 20c or more per cwt by going bulk, because of a combination of the following:

1. The 12-13c direct savings on bag cost.
2. An estimated 1-2% savings of the residue often left in bags.
3. The advantage of lower freight costs for bulk flour.
4. Less material loss from spillage or spoilage.
5. Appreciable labor savings due to automatic handling made possible by bulk.

Thanks for calling this possible misinterpretation to my attention.

John Fischer
Chief Engineer
Materials Handling Equipment
SPROUT, WALDRON & CO., INC.

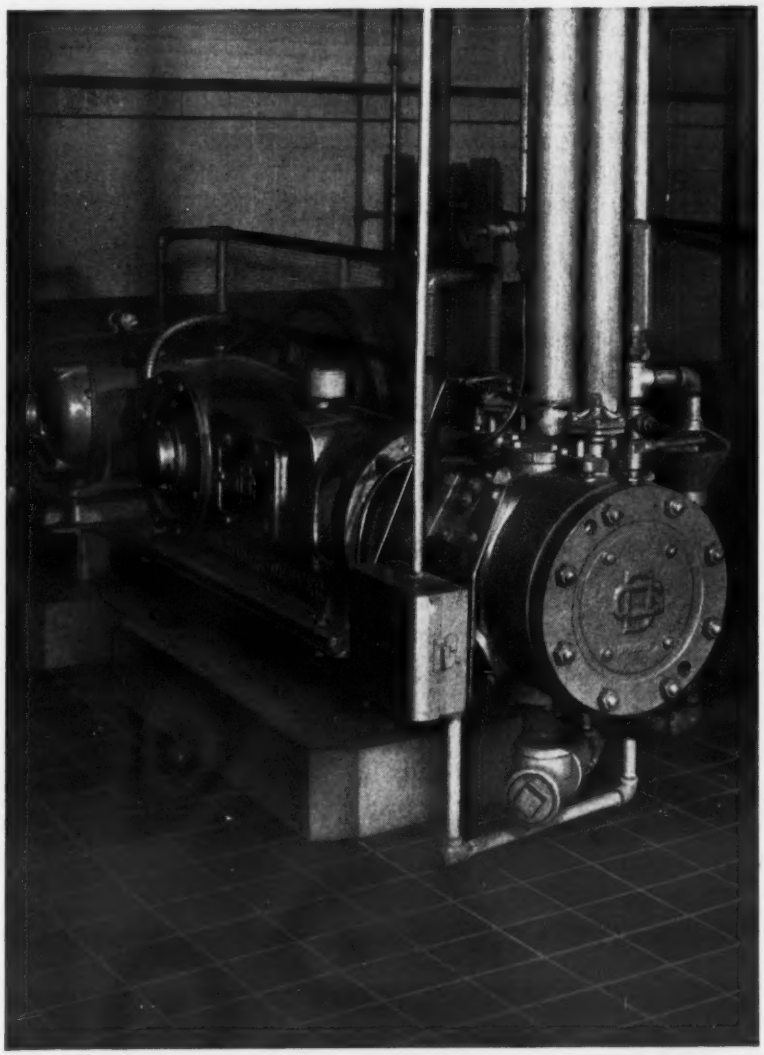
EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER DENVER

Pure, oil-free air that won't taint food, beverages or chemicals . . . won't clog sensitive control instruments . . . won't foul air-sprayed finishes. That's only one of the benefits when you install the CRX carbon piston air compressor. Carbon parts need no oil or water lubrication in the honed cylinder. Discharged air is pure and clean. Sizes from 100 to 1410 c.f.m. displacement. Write for Bulletin CRC-10. Ask about the smaller CACB oil-free compressor. Gardner-Denver Company, Quincy, Illinois.

No oil taint

...CRX carbon piston compressor



5787 on Reader Service Slip.

Handles Bulk Materials Gently

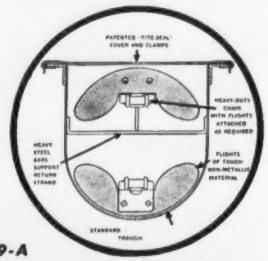
The NEW Super-Flo TRADE MARK CONVEYOR

DEVELOPED FOR FAST, EFFICIENT CONVEYING USING A SINGLE "U" SHAPED TROUGH

CONVEYS HORIZONTALLY OR ON AN INCLINE OR COMBINED — IT'S GREAT!

Offers: ECONOMICAL OPERATION, SELF-CLEANING, LOW HORSEPOWER, LONG LIFE, SIMPLE MAINTENANCE, EXTREME COMPACTNESS and MINIMUM DEGRADATION OF MATERIAL

Flights carry a deep load. Their shape fits contour of trough giving positive wiping action. Can be had in any length with spouts to suit. Tite-Seal Cover and Clamps provide dust-tight construction.

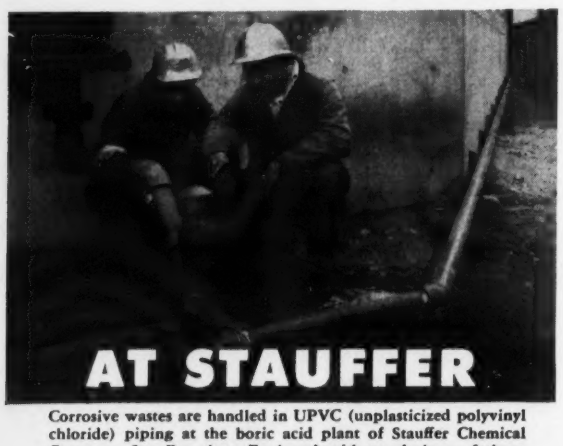


The big demand for Super-Flo Conveyors has necessitated equipping our Santa Clara, Cal. plant for full production. Prompt shipments also made from our Hammond and Winona plants.

Write for BULLETIN SF-659-A

Screw Conveyor Corporation
701 HOFFMAN STREET • HAMMOND, INDIANA
WINONA, MISSISSIPPI — SANTA CLARA, CALIFORNIA

5788 on Reader Service Slip.



Corrosive wastes are handled in UPVC (unplasticized polyvinyl chloride) piping at the boric acid plant of Stauffer Chemical Company, San Francisco. Equipped with ttp drainage fittings.

To help you on UPVC piping

We have developed valuable data to help you design for UPVC piping to stop corrosion... available in ttp Catalog 119, free on request. Also gives complete specifications on ttp fittings, flanges, valves and specialties.

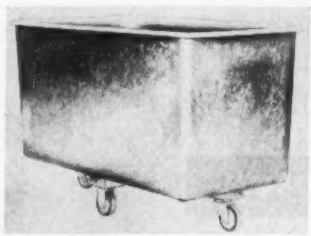
ttp TUBE TURNS PLASTICS, INC.
DEPT. FP-11, 2929 MAGAZINE STREET
Louisville 11, Kentucky

5789 on Reader Service Slip.

Box truck is ultra-light, yet almost indestructible

Practically immune to normal wear and damage

Uses: Lightweight new box truck, made of polyester resin, and reinforced by a special process with chrome-impregnated fiberglass, provides economical intra-plant handling for meat packers and food processors.



Box has smooth inside surface, with rounded corners for easy cleaning

Features: Lighter than aluminum, truck is practically indestructible, being impervious to steam, water, oil and mild acids and alkalies.

It will withstand temperatures ranging from minus 40 F to 212 F, and, for short exposures, up to 250 F.

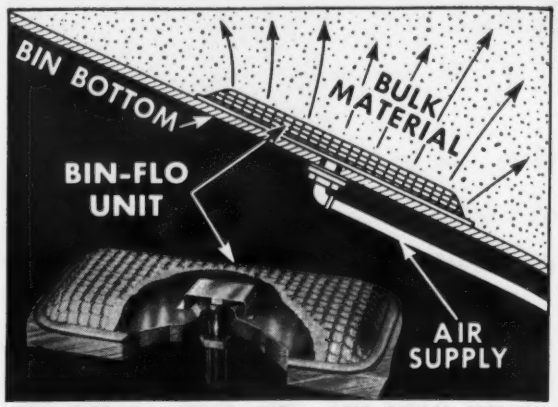
Description: Two standard sizes weigh approximately 50 and 68 lb, respectively. The former measures 18 by 36 by 24 in. deep inside, with overall measurements of 21½ by 39¼ by 31 in. high (including casters).

Larger truck is 24 by 47 by 24 in. deep inside, and is 27½ by 50¼ by 31 in. high, overall. In addition, special sizes and covers are available.

Two full-length steel channel members on bottom of truck serve for firm caster attachment and provide reinforcement against shock loads.

Two rigid casters in the center, and one double ball race swivel caster at each end may be unbolted and removed for inspection, maintenance and repair.

Swivel casters are arranged tilt style for travel in any direction (360°). Standard casters have 4¼ by 4¼ in. ball bearing, rubber tired wheels. Oilite bearing and solid rub-



BIN-FLO USES SMALL VOLUME OF AIR AT LOW PRESSURE

KEEPS BULK MATERIALS MOVING

BIN-FLO units in bins, chutes, hoppers, etc., restore flow characteristics to dry, finely ground materials which tend to pack or bridge in storage. Types for all materials and conditions. No moving parts; simple installation; negligible operating cost; no maintenance cost.

BIN-DICATOR the original diaphragm-type bin level indicator. In successful use for over 20 years. ROTO-BIN-DICATOR new, motor-driven paddle type; excellent on bins under pressure or vacuum, and for general application. Also explosion-proof units, U.L. listed.

THE BIN-DICATOR CO.
13946-C Kercheval • Detroit 15, Mich.

Write for detailed literature or call
VAlley 2-6952

WE SELL DIRECT • PHONE ORDERS COLLECT

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CAR PULLER

MORE QUALITY FEATURES

- Greater safety factor for personnel . . . no rope to snub with wire rope car puller.
- Save time, labor and money . . . one man can quickly and easily spot several fully loaded box cars.
- A type and size to fit your exact requirements.
- Rugged construction for trouble free service.
- Stocked for immediate delivery.

S-A

WRITE FOR BULLETIN 753

STANDARD PRODUCTS DIVISION
STEPHENS-ADAMSON MFG. CO.
17 RIDGEWAY AVENUE • AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA
CLARKSDALE, MISSISSIPPI • BELLEVILLE, ONTARIO

5791 on Reader Service Slip.

ber wheels also are available.

(Lightweight plastic box truck reinforced with chrome-impregnated fiberglass, is manufactured by Nutting Truck and Caster Company, 1201 W. Division St., Faribault, Minn.)
5855 on Reader Service Slip.

Air-operated case handling

Modern systems to simplify bottling room operation and case handling are described in 6-page bulletin.

Details are given on job-engineered, air-operated stackers, unstackers, casers and combinations for both glass and paper carton operation.

In addition to photos, scale drawings show simplicity of room layouts and space requirements.

("Air-Lift," bulletin W-1421, may be obtained from Materials Handling Division, The Creamery Package Mfg. Company, 1243 W. Washington Blvd., Chicago 7, Ill.)
5792 on Reader Service Slip.

3 conveying systems for wide range of loads

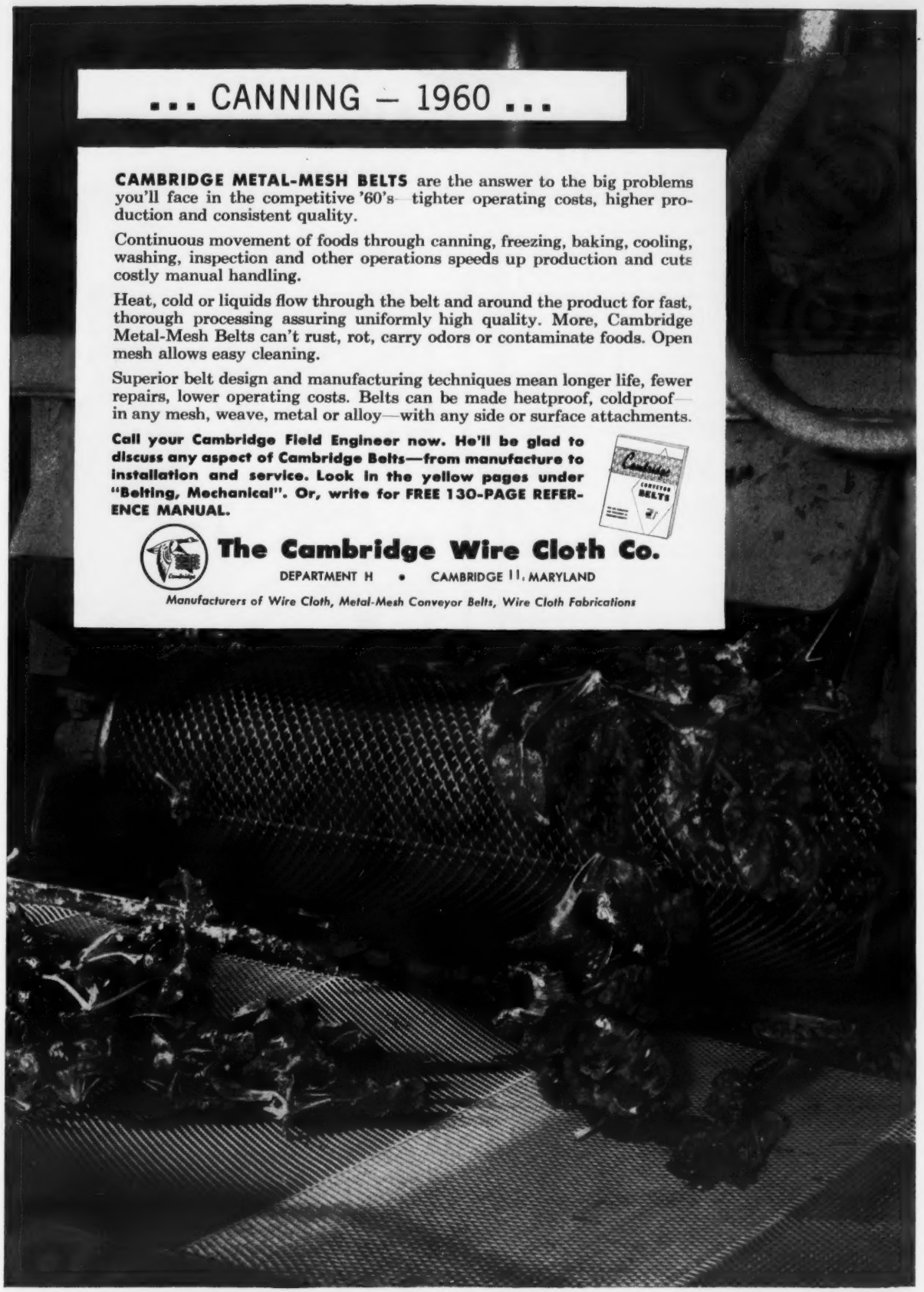
Four-page brochure covers three types of powered conveyors which are designed to handle products ranging from light, delicate to rugged loads.

The conveyors which cover this range are the linked-rod belt conveyor, the heavy-duty slat type and the rubber-belt conveyor.

Curved sections and other components of these conveyors as well as application illustrations and specifications are presented.

("Wendway Industrial Conveying Systems," is available from the Union Steel Products Company, Industrial Conveyor Division, Albion, Mich.)
5793 on Reader Service Slip.

Simultaneously load up to 48 milk trucks from one cooler . . . December FP!


. . . CANNING — 1960 . . .
CAMBRIDGE METAL-MESH BELTS are the answer to the big problems you'll face in the competitive '60's—tighter operating costs, higher production and consistent quality.
Continuous movement of foods through canning, freezing, baking, cooling, washing, inspection and other operations speeds up production and cuts costly manual handling.
Heat, cold or liquids flow through the belt and around the product for fast, thorough processing assuring uniformly high quality. More, Cambridge Metal-Mesh Belts can't rust, rot, carry odors or contaminate foods. Open mesh allows easy cleaning.
Superior belt design and manufacturing techniques mean longer life, fewer repairs, lower operating costs. Belts can be made heatproof, coldproof—in any mesh, weave, metal or alloy—with any side or surface attachments.
Call your Cambridge Field Engineer now. He'll be glad to discuss any aspect of Cambridge Belts—from manufacture to installation and service. Look in the yellow pages under "Belting, Mechanical". Or, write for FREE 130-PAGE REFERENCE MANUAL.
The Cambridge Wire Cloth Co.
DEPARTMENT H • CAMBRIDGE 11, MARYLAND
Manufacturers of Wire Cloth, Metal-Mesh Conveyor Belts, Wire Cloth Fabrications

5794 on Reader Service Slip.

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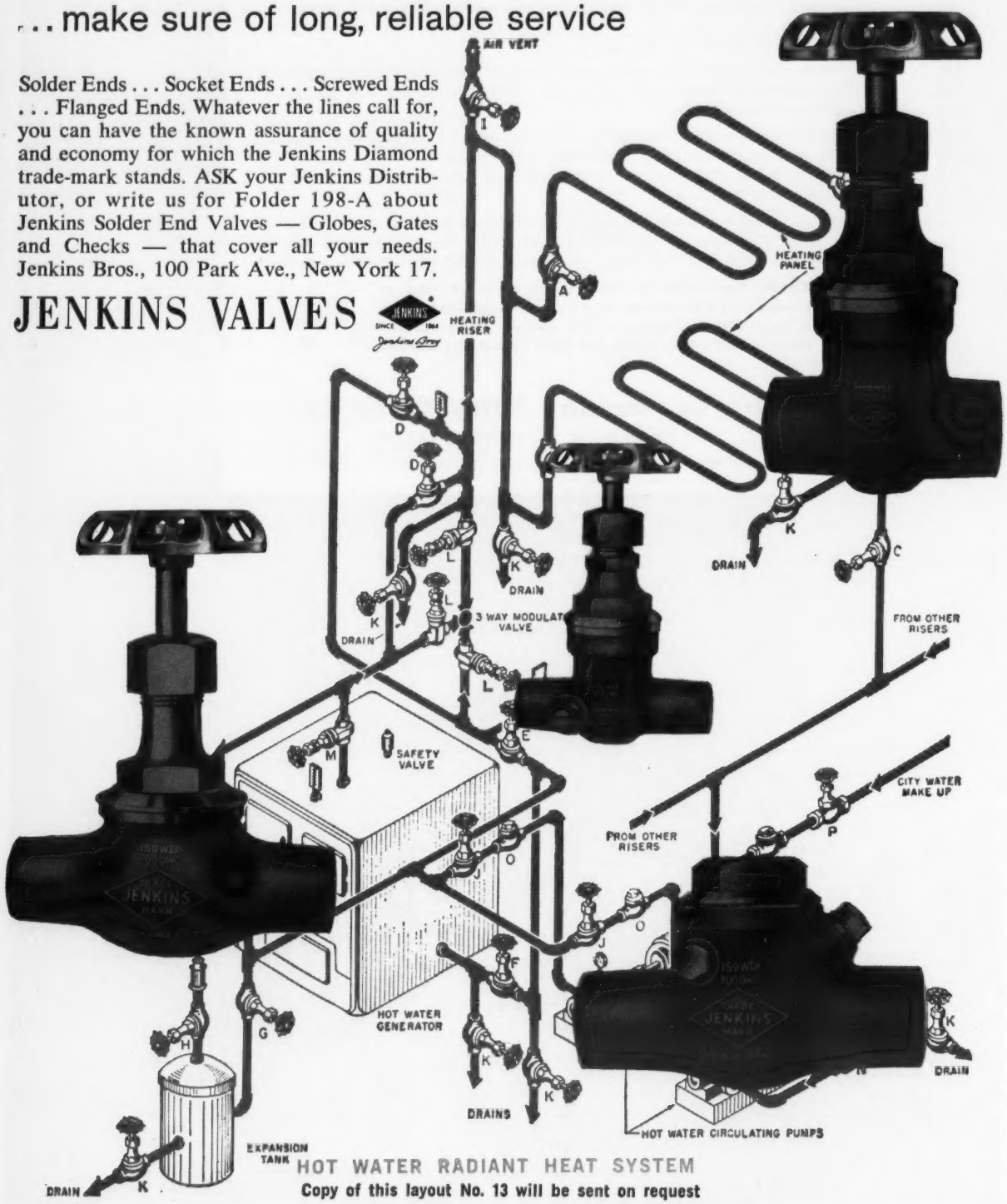
on SOLDER END Valves, too

...make sure of long, reliable service

Solder Ends . . . Socket Ends . . . Screwed Ends . . . Flanged Ends. Whatever the lines call for, you can have the known assurance of quality and economy for which the Jenkins Diamond trade-mark stands. ASK your Jenkins Distributor, or write us for Folder 198-A about Jenkins Solder End Valves — Globes, Gates and Checks — that cover all your needs. Jenkins Bros., 100 Park Ave., New York 17.

JENKINS VALVES



Copy of this layout No. 13 will be sent on request

5795 on Reader Service Slip.

Classifies industrial trucks

Condensed catalog lists fork trucks, platform trucks, die handling trucks and mobile cranes.

Complete specifications for all models, together with illustrations, are given. Literature also details special engineering service available.

("Elpar Industrial Trucks," 12 pages, is available from The Elwell-Parker Electric Company, 4205 St. Clair Ave. Cleveland 3, Ohio.)
5796 on Reader Service Slip.

Depalletizes

(*Continued from page* 89)

third floor, automatically discharged to another roller-conveyor set. From here fork trucks deposit them as needed on the infeed roller conveyors to the depalletizers.

Where plant layout permits, automatic depalletizer could be linked by continuous roller conveyor system from truck to depalletizer infeed, closing one of the last links in automated handling.

Results: Only attention needed for the two depalletizers at Burgie is man to remove fiber coverings from pallets at infeed to depalletizer, and services of fork truck to keep surge conveyor full when needed.

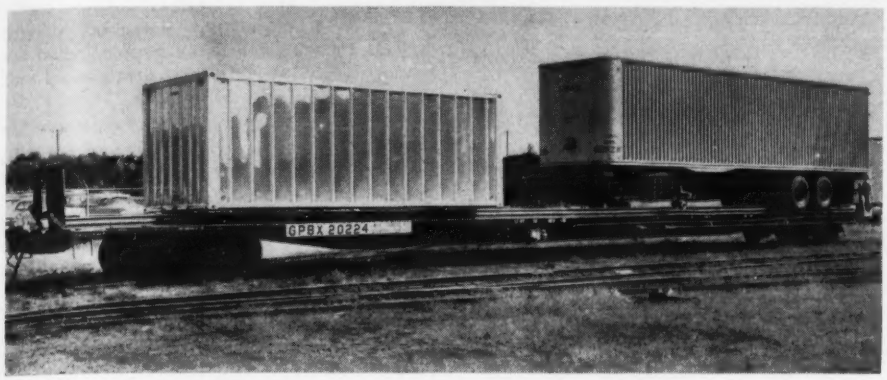
With a surge capacity of 18 pallet loads in the roller conveyor systems, truck unloading time has been reduced by 50 per cent, which helps keep can handling costs at minimum.

Over-all, bulk shipment saves handling of individual reshipper cases or trays. A truck will hold substantially more cans when bulk-palletized instead of packed in reshipper cases.

At the brewery, further economies accrue from easy handling of unitized loads in the warehouse, bulk servicing to palletizers, and automatic flow of cans to the filling lines.

(Canco automatic-feed empty can depalletizer is product of American Can Co., 99 Park Ave., New York 17, N.Y.)
5797 on Reader Service Slip.

Versatility of G-85 piggy-back car is shown by its carrying a trailer and a container at same time. Trailer is secured through a kingpin hitch, while container is tied down by hooks



Here's versatile 'team' that gives . . .

Complete containerized transport

- **New container interchanges between road, rail and ship via any standard handling means**
- **New piggy-back car handles both trailers and containers, without any modification**

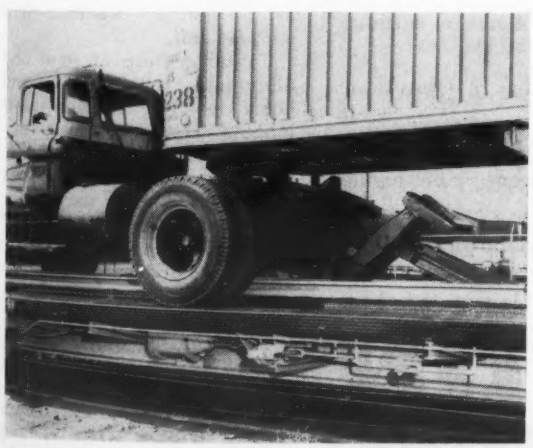
NORB LEINEN
Associate Editor

Simultaneous development of the first container specifically designed to operate interchangeably on all modes of transport, and a piggy-back rail car that handles containers or any type of trailer interchangeably places great versatility at the disposal of shippers.

Container adapts to all standard means of loading and unloading — overhead crane, winch or fork lift — making it economical and practical for all terminal operations, large or small.

Flexibility offered by the new piggy-back car means that a container can be packed by the shipper, trucked to the

(Continued on next page)



As tractor detaches and moves away from trailer, it lifts unique hitch on the G-85 car under the trailer

Key innovation of G-85 car is unique hitch, shown in rear view raised as it would be under a trailer

EVAPORATORS

FABRICATION RESEARCH DESIGN OPERATION

KRENZ INC

ESTABLISHED 1906

OSCAR KRENZ INCORPORATED

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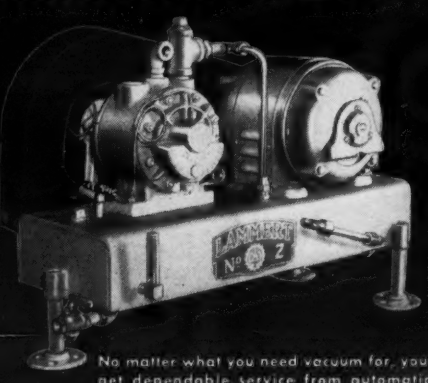
PROCESSING EQUIPMENT that PAYS OFF in PERFORMANCE!

- Evaporators
- Vacuum Pans
- Flash Break Units
- Mixing Tanks
- Condensers
- Heaters
- Rotary Coil Vessels
- Kettles
- Essence Recovery Systems

Write for complete details

5798 on Reader Service Slip.

VACUUM
LAMMERT PUMPS



No matter what you need vacuum for, you will get dependable service from automatically lubricated Lammert pumps. Capacities—4.3 to 225 cubic feet per minute. From medium to high vacuum (up to 20 microns of barometer).

Write for catalog showing the complete line, including specifications, of Lammert pumps and compressors.

LAMMERT & MANN CO., INC.
1753 Walnut Street, Chicago 12, Illinois, SFelex 3-0383

5799 on Reader Service Slip.

(Continued from preceding page)

rail line, loaded swiftly onto the car either on its trailer chassis or detached, carried to another rail point, then delivered to destination via highway.

New system helps avert a serious imbalance of containers and chassis. When more chassis are needed at destination, the container simply is kept on the chassis, and the entire unit is loaded aboard the car.

The container

All four corner posts of new container have provision for lift by overhead crane — especially important in ship operation where the crane is the only practical means of handling. Some railroads also use the big cranes in major piggy-back centers.

For loading and unloading containers from piggy-back car by winch — the most economical and practical method in a small terminal — container has rollers which can be snapped in and out easily.

A winch, mounted on the tractor or on a railstop, pulls the container off the car at the same level as the waiting chassis.

Container also can be loaded aboard a piggy-back car by large fork lift — making use of "pockets" in sides of container.

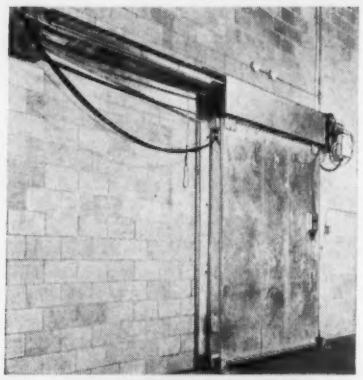
While fully loaded and awaiting shipment, container may be stacked two-high. This gives it additional advantage of being able to serve as a mobile, weather-tight storage unit.

Containers are of steel and aluminum construction, and come in 17-, 20- and 24-ft lengths. The 20-ft unit is expected to be the most popular, as it permits the 85-ft-long piggy-back car to carry four such containers, destined for four different consignees.

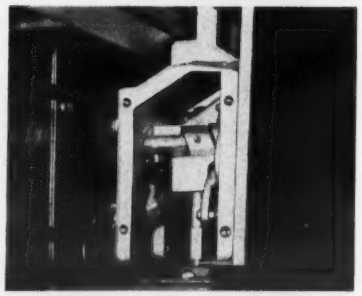
Body components are available in either steel or aluminum.

Although the new container can be carried on any existing piggy-back car, it was designed for use specifically on GATX R-85 ("Clejan") and the new G-85 series cars.

(Continued on page 104)



FAST OPERATION of Electroglide Freezer Door saves refrigeration. Note Jamison Frostop® installed to prevent icing and freezing.



POSITIVE SEAL. When door reaches closed position, exclusive Jamison camming action forces door *in* and *down*.

Photos Courtesy: National Tea Company, Council Oak Stores, Sioux City, Iowa
Insulator: Low Temp Insulations, Omaha, Nebraska

In-and-out freezer room traffic speeded up by Jamison Electroglide® Doors

The efficiency and economy of Jamison's new Electroglide Power Operated Door are assured by special Electroglide features—available in no other door.

RANGE OF TYPES—Available as bi-parting and single leaf right or left hand.

LEVEL RIDE—Door opens and closes without gasket drag or wear.

SAFETY—Full height safety edge reverses door instantly on contact.

EMERGENCY CONTROLS—Manual operation when power off; emergency release from inside when padlocked outside.

Get the complete story on Electroglide Cooler and Freezer Doors. Write today for new bulletin to Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON
COLD STORAGE DOORS

5800 on Reader Service Slip.

"Can't run 'em and fix 'em at the same time, Chief"

Hertz leased trucks lick repairs, delivery delays

NO UPKEEP... NO INVESTMENT

Tired of runaway truck operating costs? Expensive repairs? Costly delays due to breakdowns? Switch to Hertz leasing and get new custom-engineered GMC, Chevrolet or other sturdy trucks . . . or we'll buy your present trucks, rebuild them if necessary, and lease them back to you.

Hertz is America's No. 1 truck lessor, with over 500 truck locations in the U.S. and Canada. Trucks are supplied faster, serviced better by crack night crews. Hertz gets you out of the truck business, back into your *own* business . . . cuts fleet problems to the writing of one budgetable check per week.

And you can rent Hertz trucks for peak periods.

Call your local Hertz Office. Or write for this

fact-filled truck lease booklet, to Hertz Truck Lease, Dept. F11, 218 S. Wabash, Chicago 4, Illinois.

5801 on Reader Service Slip.

(*Continued from page* 102)

The rail car

New G-85 piggy-back car will handle containers of any length without special terminal facilities, such as cranes.

It also will carry all types of highway equipment, including standard semi-trailers, semi-trailers with automatic landing gear, tank containers, auto carriers and moving vans — all without need for tie-down.

In addition, the G-85 offers a saving of time and manpower in loading and unloading.

A truck driver can back onto the car in one pass, by using the self-aligning center-guide system on car. Without leaving truck cab, driver can handle all tie-down operations himself, using a new hitch which operates automatically. No men are needed on the piggy-back car itself.

To remove a trailer from the car, driver simply backs up to the trailer. As the tractor hits the hitch, the fifth wheel engages the kingpin and the hitch automatically drops below top of piggy-back car's centersill, readying the trailer for removal.

Trailers and containers of maximum height can be carried piggy-back, because the car's design lets them ride six to eight in. closer to the top of the rail than standard equipment.

Shock absorbers allow trailers or containers under shock to move as much as 10 in. in either direction — a greater distance than in any other type of piggy-back equipment.

(New container which allows complete interchangeability between road, rail and ship is development of Fruehauf Trailer Company, 99 W. Bethune, Detroit 32, Mich.)
5802 on Reader Service Slip.

(New G-85 piggy-back rail car for interchangeable transport of containers or trailers is development of General American Transportation Corporation, 135 S. La Salle St., Chicago 90, Ill.)
5803 on Reader Service Slip.

Mr. Shipper: Are *1 preventing your shipments from arriving

The **DRI-PROTECTO CAR is a compact car offering maximum protection from heat or cold for those long hauls of straight loads where temperature extremes are encountered. Movements of dry commodities that require that extra protection for customer's satisfaction are best handled in this car. The DRI-PROTECTO CAR also offers complete protection against infestation.

The DRI-PROTECTO CAR is heavily insulated and offers a smooth, flush interior and can eliminate or greatly reduce car preparation costs. Consult with NORTH AMERICAN. Test cars furnished promptly.

**AAR Classification—R.B.

Important features of the DRI-PROTECTO CAR

1. Inside of doors are flush with sidewalls, eliminating doorway strapping and providing smooth wall from end to end.
2. Smooth varnished interior walls, reducing or eliminating sidewall cooperage.
3. Six-foot sliding steel doors, allowing free movement of mechanical loaders in and out of car. Palletized loading.
4. Fully insulated—sidewalls, roof, floors and ends.
5. Constant temperatures because of insulation reduces or eliminates condensation.
6. Extremely tight construction of car provides cleaner lading for consignee.
7. Availability of identical cars is beneficial to pattern-type loading.

*1 HEAT 2 COLD 3 INFESTATION

***REMEMBER*—IF IT'S NEW, IT'S NORTH AMERICAN**

these CULPRITS

2

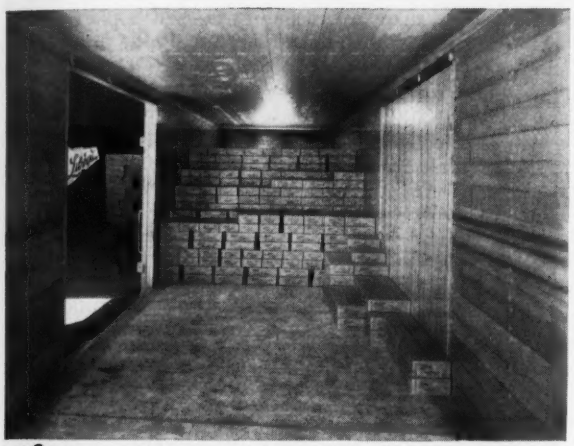
3

at destination in excellent condition?

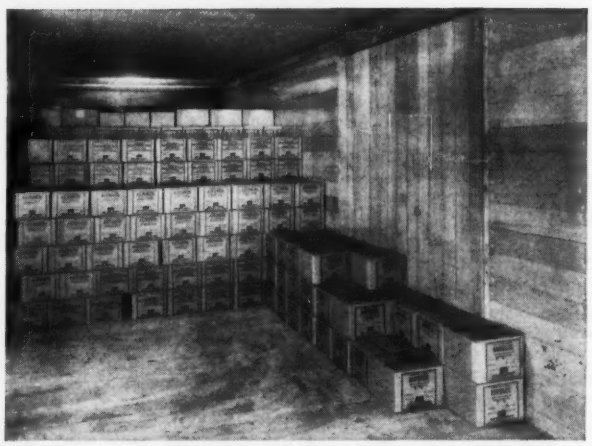
DEFEAT THEM BY SHIPPING IN

NORTH AMERICAN CAR CORPORATION'S

DRI-PROTECTO CAR

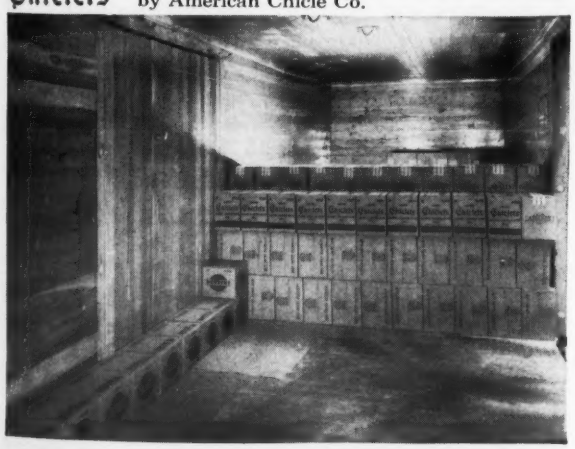


Libby's Shipment of Canned Goods in DRI-PROTECTO CAR by Libby, McNeill & Libby



Wyeth Shipment of Drugs in DRI-PROTECTO CAR by Wyeth Laboratories, Inc.

Chiclets Shipment of Chiclets in DRI-PROTECTO CAR by American Chicle Co.



NORTH AMERICAN CAR CORPORATION

231 South LaSalle Street, Chicago 4, Illinois

Telephone Financial 6-0400

North American Car Corporation
Sales Dept. Attn: Mr. H. R. Platt
231 So. La Salle Street, Chicago

Send further information on DRI-PROTECTO CAR to:

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

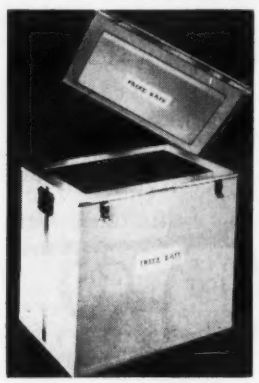
5804 on Reader Service Slip.

Why buy expensive refrigerated trucks when insulated shipper . . .

Keeps foods frozen solid 48 hr without dry ice, pre-cooling

Uses: Foam plastic shipper-storage unit maintains safe freezing temperature limits for up to 175 lb of frozen fruits, vegetables, meats, dairy products and other frozen items demanding sustained low temperatures in shipment and storage. Additional uses are as frozen food island displayer and merchandiser.

Features: Unit requires no dry ice, refrigerant *or a pre-cooling,* yet maintains safe frozen temperature level over a 24-48 hr period.



Shipper's foam insulation core is one of largest one-piece molded units of its kind ever made, weighs only 12 lb

As example, frozen foods placed in shipper at minus 10 F will experience but a 10-15 degree rise in 24 hr — even when outside temperature is as high as 95 F.

This feature, plus the unit's light empty weight (22 lb) permits capital equipment savings in that non-insulated, unrefrigerated delivery trucks can be used for refrigerated deliveries, and ordinary panel trucks can be used on extra non-scheduled frozen food deliveries.

Description: Five-cu-ft shipper has an outer case of U.S. Royalite, a lifetime in-

(*Continued on next page*)

Replace high priced leather with Edmont coated work gloves

Coated gloves often outwear leather 3 to 1

Edmont
JOB-FITTED
GLOVES

Leather work glove prices have gone up, up, up in the past year. As a result, many companies are taking their first careful look at other types of gloves, and are turning to modern Edmont *coated* gloves. Their special plastic, neoprene and natural rubber coatings outwear ordinary leather, yet cost much less. Compared with leather and cotton, Edmont gloves provide savings from 40% to 80% — and give more protection at the same time.

Free Test Offer to Listed Firms: Describe your operation. From more than 50 types we will recommend the most suitable glove and supply samples for comparison-test on the job.

Edmont Manufacturing Company
1212 Walnut Street, Coshocton, Ohio.
In Canada write MSA, Toronto

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(*Continued from preceding page*)

dustrial plastic used in luggage, trunks and the liners of refrigerated trucks. Or, an outer case of 275# Test Fiberboard is available.

Inside liner is also of U.S. Royalite seamless plastic, approved by USDA for food handling and transport.

Sandwiched between outer case and inner liner is a 2½-in.-thick layer of Koppers "Dylite" expandable polystyrene foam plastic. Insulating qualities equal four in. of cork, yet weight of shipper's thermal insulation is only one-fifth that of cork.

Easily handled shipper meets need for low-cost transport and storage of frozen foods

Outside measurements are 28 by 19 by 28 in. Net cubic inside measurements are 23 by 14 by 23 in. Hardware includes rustproof, nickel-plated, spring-loaded handles and latches.

Unit is completely waterproof, vermin-proof, rot-proof and will not mildew.

(Freez/Safe Frozen Food Transporter is manufactured by Glo-Brite Foam Plastic Products, Polyfoam Packers Division, 6415 N. California Ave., Chicago 45, Ill.)
5807 on Reader Service Slip.

For more information

on transportation developments, see New Industrial listings, page 113.

Would you like to receive FOOD PROCESSING personally?

It will be sent to you without charge or obligation . . .

. . . if you qualify
. . . if you request it

If you are responsible for processing operations in an administrative capacity as plant superintendent, food technologist, chemist, engineer or equivalent responsibility . . . in a plant of substantial operations* where food processing is an important factor . . . FOOD PROCESSING will be sent to you without charge or obligation if you request it. Use form below. In requesting, be sure to answer all questions. If your firm is not rated or listed in standard references, indicate size of the company by capacity, annual sales or number of employees. Unless all information is given, magazine will not be sent.

*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

FOOD PROCESSING
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CHICAGO 11, ILLINOIS

Please send me FOOD PROCESSING without charge or obligation

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Rating of Company_____
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City_____ Zone_____
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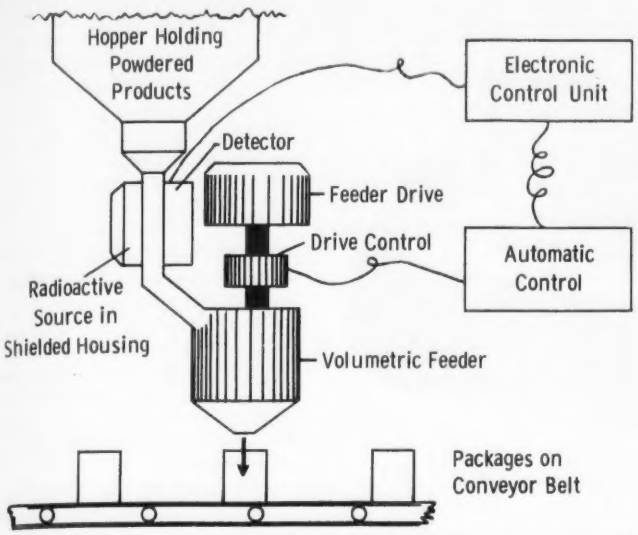
Main Products_____



In the system, powdered product, leaving the hopper, passes through a tube into a volumetric filler. A radioactive source is mounted on one side of the tube, with a detector connected to an electronic unit, on the other side. Since beta particles emitted from the radiation source are absorbed in inverse proportion to bulk density, changes in bulk density of the product passing through the tube will cause changes in strength of radiation detection. Radiation detections are transmitted to an electronic control unit which relays signals directly to an automatic control unit. Automatic control unit regulates volumetric flow according to strength of this signal, providing a constant weight for each package

Cuts variations in packaging fill by ⅔

Nuclear bulk density gage offers savings on product giveaway of over $200 per day per filling machine

Nuclear bulk density gage, used in conjunction with volumetric filler has reduced weight variations in filling packages with powdered product from ±15% to less than ±5% of desired weight.

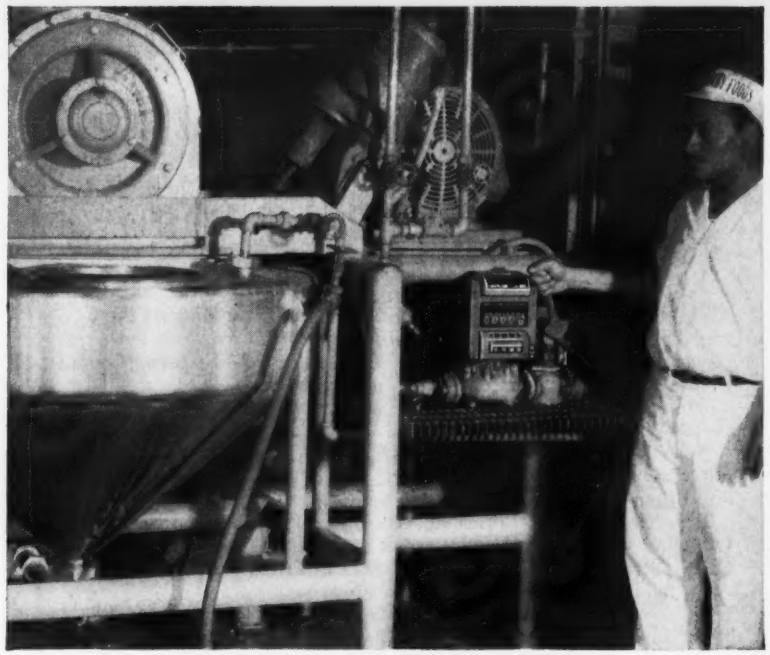
Now being used by powdered milk manufacturer filling 60 packages per minute, instrument also has application with numerous other powdered foods such as powdered coffee, dry cake mixes, instant mashed potatoes, etc.

Providing a uniform weight in each package has been extremely important in the packaging of powdered milk. To reconstitute powdered milk, a specific amount of water to be added to the product is indicated on each package.

This requires a constant weight for each packaged to give a final product of uniform quality with high consumer acceptance. This same principle would apply to numerous other powdered food products.

The problem of more accurate volumetric packaging with volumetric fillers has

(*Continued on next page*)



Accurate Neptune Meters add "FINISHING TOUCH" to Gerber Baby Foods

Precise volumetric control in finishing canned foods is a common problem. Gerber Products Company set about solving it with all the meticulousness they could muster for their sensitive baby market. Formerly they carefully weighed all ingredients of the batch, then introduced water manually up to a mark in the cone tank. Occasional human errors were costly.

Cure was to install two Neptune hot water meters with Auto-Stop quantity control. The operator simply pushes buttons to set the quantity required by the formula, and opens the valve. The meter shuts off automatically . . . delivers the exact quantity every time.

In another department Gerber uses Neptunes for accurate batching of liquid sugar and water. Improves quality control, reduces traffic on the mixing platform, saves time, and improves housekeeping.

You, too, can improve quality, and save time and materials with Neptune liquid meters.

GET THE FACTS
Ask for helpful Meter Data Bulletin 566 KFP See Neptune Data Pages in Chemical Engineering Catalog.

neptune

NEPTUNE METER COMPANY
19 West 50th Street • New York 20, N.Y.

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5808 on Reader Service Slip.

(*Continued from preceding page*)

long plagued manufacturers. In attempting to solve this, they have tried to measure a uniform bulk density of product going to the filler. This is not easily achieved.

Bulk density gage now permits measurement of changes in bulk density of product going to filler and adjusts volume discharged from filler. (See diagram)

Powdered milk manufacturer, using bulk density gage in filling operations, reports the system has resulted in savings of over $200 per day per machine in product giveaway alone.

Additional savings have also been noted in labor. The same number of personnel now operate more machines and produce more packages in the same operating time and with the same amount of product as they did previously.

Checkweighing of packages has been eliminated, reducing the number of steps in the process.

(Bulk density gage is a development of Radiation Counter Laboratories, Inc., Skokie, Illinois.)
5810 on Reader Service Slip.

Measure, control density variable in fluid and slurry processing

Gamma radiation density gage, which may be used for automatic, continuous measurement and control of density variable in fluid and slurry processing, is described and illustrated in 2-page bulletin.

Gage clamps directly to outside of process pipe at point of measurement. Pipe diameter may range from four to 14 inches.

Gamma radiation energy from a radioactive source passes through the pipe and the material flowing inside. The amount of energy absorbed by the material is proportional to density of the material.

Radiation not absorbed is detected by a measuring cell. During processing, as the

SERIES 40 GOBBLES UP EXTRA HEAVY CONDENSATE LOADS

This "thirsty" Yarway Impulse Steam Trap gives you all the well-known Yarway advantages like *quick heat-up, even temperatures, small size, good for all pressures, non-freezing*—PLUS the added feature of *huge capacity.*

For example, at 100 psig the ¾" size will handle 5600 lbs/hr; the 2½" size, 62,000 lbs/hr.

Specify the Yarway Series 40 Trap for applications on large autoclaves, cooking kettles, heat exchangers, heating coils and other places where loads are heavy.

Buy the Yarway Series 40 from your nearby Industrial Distributor—more than 270 stock and sell the Yarway line. Over 1,250,000 Yarway Impulse Steam Traps already sold.

YARNALL-WARING COMPANY
100 Mermaid Ave., Philadelphia 18, Pa.

SERIES 60—normal needs, pressures to 400 psi, 6 sizes. **SERIES 120**—normal needs, pressures to 600 psi, 6 sizes. **SERIES 40**—for extra heavy loads, 5 sizes. **NO. 30**—for extra light loads (½" only). **INTEGRAL STRAINER**—highest pressures and marine use, 6 sizes.

YARWAY | *impulse® steam traps*

5809 on Reader Service Slip.

material becomes more or less dense than optimum required, an amplifier will send signals through recorder controller to actuate valves, pumps, agitators, etc. for controlling density variable in flow processing.

Diagram of gage, as well as of a typical density control system is shown in bulletin.

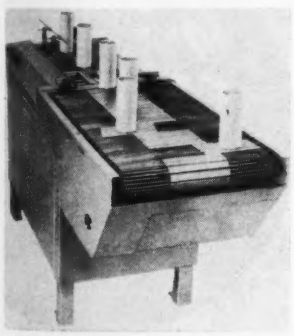
("Ohmart Density Measurement & Control Systems", Bul No. LSG, may be obtained from The Ohmart Corporation, 2236 Bogen St., Cincinnati 22, Ohio.)

5811 on Reader Service Slip.

Automatically checkweigh up to 400 packages/min

Checkweigher machine automatically weighs, classifies and segregates packages at speeds up to 400 per minute. Unit offers accuracies to ±¼ per cent of gross package weight.

A 3-way reject system separates overweights, underweights, and acceptable weights with a gentle, positive action. Unit is ideally suited to tall, open cans and many containers which have been impossible to handle at high speeds previously.



Machine is splashproof, easy to clean and occupies only 48" by 24". Height of unit is adjustable to any production line

Any semi-rigid package with one flat surface, ranging in size from 1½" by 1½" to 10" by 10", can be handled. Machine can be equipped with feed-back control, recording devices for a printed record.

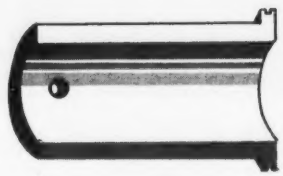
(*Continued on next page*)

HOW TO DESIGN THE PERFECT FLOWMETER FOR LIQUID FOODS

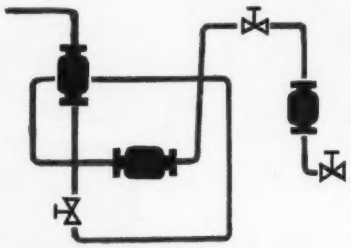
Suppose you were given the job of designing *the perfect instrument* for metering food flows. You would probably start out by compiling a list of general specifications that goes something like this . . .

☐ meters practically all kinds of fruit juices, beer, milk, slurries, syrups, molasses, and other food flows

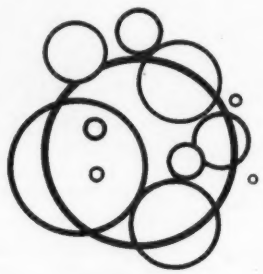
☐ as completely free of all obstructions as a regular run of pipe



☐ completely sanitary and corrosion-proof, requires no maintenance



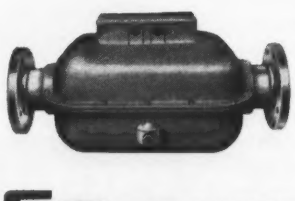
☐ no drop in pressure, unaffected by piping configurations or valve placement, measures full pipe flow in either direction without accessories



☐ available in pipe sizes from 1/10" to 72"

±1%

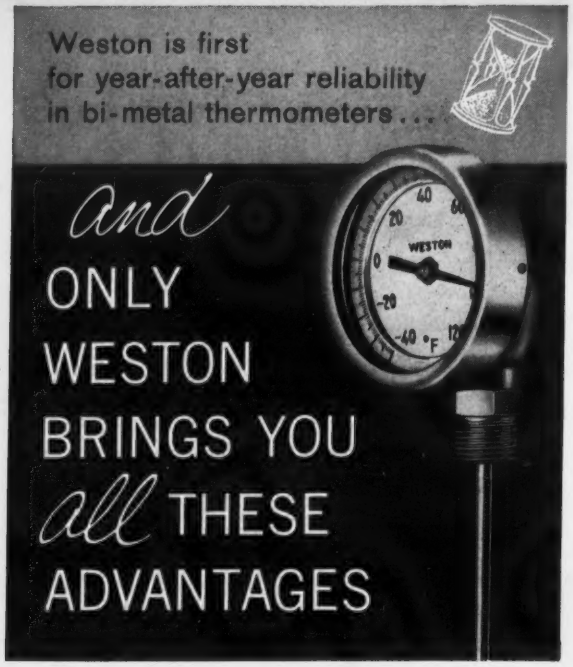
☐ accuracies better than ±1% of full scale—independent of viscosity, consistency, density, or turbulence



Such a flowmeter has already *been* designed, built and proven in hundreds of applications. It's the *F & P Magnetic Flowmeter*. You can get the complete story by contacting the F&P field engineer nearest you, or write for Catalog 10D1416. Fischer & Porter Company, 4019 County Line Road, Hatboro, Pa. In Canada, Fischer & Porter (Canada) Ltd., 2700 Jane Street, Downsview, Ontario.

FP FISCHER & PORTER COMPANY *COMPLETE PROCESS INSTRUMENTATION*

5812 on Reader Service Slip.



Breadth of line . . . number of desired features . . . quality of craftsmanship . . . ruggedness and stability – from any point of view, Weston thermometers are unsurpassed. Yes, the company that introduced the bi-metal to industry continues its leadership. That's why your smartest move is to entrust your process to no thermometer but a Weston.

FOR EXAMPLE, LOOK AT ALL THE ADVANTAGES YOU GET WITH THE NEW WESTON '4000' SERIES:

- ALL STAINLESS STEEL CONSTRUCTION, INCLUDING WELDS, AND IN-LINE SCALES AND POINTERS TO ELIMINATE MIS-READING DUE TO PARALLAX
- EXTERNAL ADJUSTMENT FEATURE PROVIDED AS STANDARD EQUIPMENT
- REMOVABLE BEZELS FOR EASY WINDOW REPLACEMENT IN THE FIELD
- ADVANCED GASKET MATERIAL TO PROTECT AGAINST "BREATHING" AND LEAKAGE EVEN UNDER EXTREME OUTDOOR ENVIRONMENTAL CONDITIONS AND LOW TEMPERATURE MEASUREMENT SERVICE WITHOUT FOGGING OR FREEZE-UP
- GUARANTEED ACCURACIES WITHIN 1% OF RANGE OVER ENTIRE SCALE
- FULL LINE OF SIZES, STEM LENGTHS AND RANGES IN BACK AND BOTTOM-CONNECTED MODELS

For full information and name of local distributor, contact your local Weston representative . . . or write to Daystrom-Weston Sales Division, Newark 12, N. J. *In Canada: Daystrom Ltd., 840 Caledonia Rd., Toronto 19, Ont. Export: Daystrom Int'l., 100 Empire St., Newark 12, N. J.*

WESTON A DAYSTROM UNIT

Bi-metal Thermometers

WORLD LEADER IN MEASUREMENT AND CONTROL

5813 on Reader Service Slip.

instrumentation

(*Continued from preceding page*)

Special construction models are available for dusty or explosive atmospheres.

(High-speed, electronic checkweigher is a development of FMC Packaging Machinery Division, 4900 Summerdale Ave., Philadelphia 24, Pennsylvania.)

5814 on Reader Service Slip.

Monitors 100 temperature points simultaneously

Temperature alarm readout unit simultaneously monitors up to 100 temperature points, depending upon number of 10-unit panels it contains.

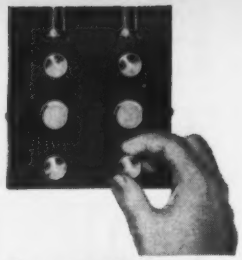
It is designed so that when any one of the temperature points being sensed reaches the temperature indicated on its control dial, an alarm is sounded, and the critical point identified by a numbered light on the control panel.

Note individual 10-unit panels in temperature alarm readout

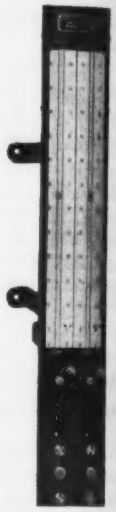
Through constant contact, it eliminates time lag, a factor encountered in all scanning type systems. The readout's audible alarm may be turned off by a reset push button, while the identifying light remains on as long as the temperature is off-normal.

As each channel operates independently, the unit will continue to sense the other 99 temperature points and will alarm under off-normal conditions.

The actual temperature of any point, normal or off-nor-



NEW INTEGRAL SIMPLICITY in continuous, remote TANK GAUGING



Simple in principle and practice . . . the new Meriam Continuous-Purge Tank Gauge. Integral easy-reading purge-flow indicator and convenient front-panel operating knobs make operation simple, foolproof.

Based upon manometric principles, the Gauge has the accuracy and dependability inherent in the manometer. No calibration troubles, no mechanical difficulties. Indication is direct, dependable and continuous.

Rugged enough for outdoor use, the Gauge can also be panel mounted anywhere up to 600 feet from the tank. It is available in single- and multiple-tube models in ranges up to 60 inches, with a choice of indicating fluids to permit selection for sensitivity and readable accuracy required.

WRITE FOR BULLETIN L-10

The MERIAM Instrument Company

10920 Madison Avenue, Cleveland 2, Ohio

5815 on Reader Service Slip.

Get the
COUNT!
Durant Sales Engineers will supply a PRODUCTIMETER for every and any counting need in your plant
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SINCE 1879
Count Everything

5816 on Reader Service Slip.

mal, may be determined by first depressing a quiet button and then manually rotating the appropriate set point dial until the numbered light flashes on.

A small writing area, adjacent to each dial, enables operator to record temperature at which dial was originally set to eliminate any error when resetting.

Unit provides direct readings on Fahrenheit scale with an overall accuracy ± 3 F. Interchangeable printed circuit cards are used throughout. There are no moving parts and no vacuum tubes. The unit is completely transistorized.

(Simultaneous Temperature Alarm Readout is a development of Fischer & Porter Co., 303 Jacksonville Rd., Hatboro, Pennsylvania.)
5817 on Reader Service Slip.

Continuously controls feeding by weight from 3 to 300 lb/hr

Uses: Weighing-feeder machine, designed for electronically controlled feeding of dry bulk material, provides continuous volume feeding at any rate between 3 and 300 pounds per hour.

Features-Description: In operation, a weighed batch of material is loaded into the machine's nine cubic foot stainless steel hopper, which is mounted on a beam-type hopper scale.

Control mechanisms on the scale beam are set for desired rate of feed.

Material is metered from hopper discharge into processing by an electromagnetic vibrating feeder, which is electronically controlled by weight of material in hopper. An electromagnetic vibrator on hopper keeps materials free-flowing and insures dependable supply to feeder.

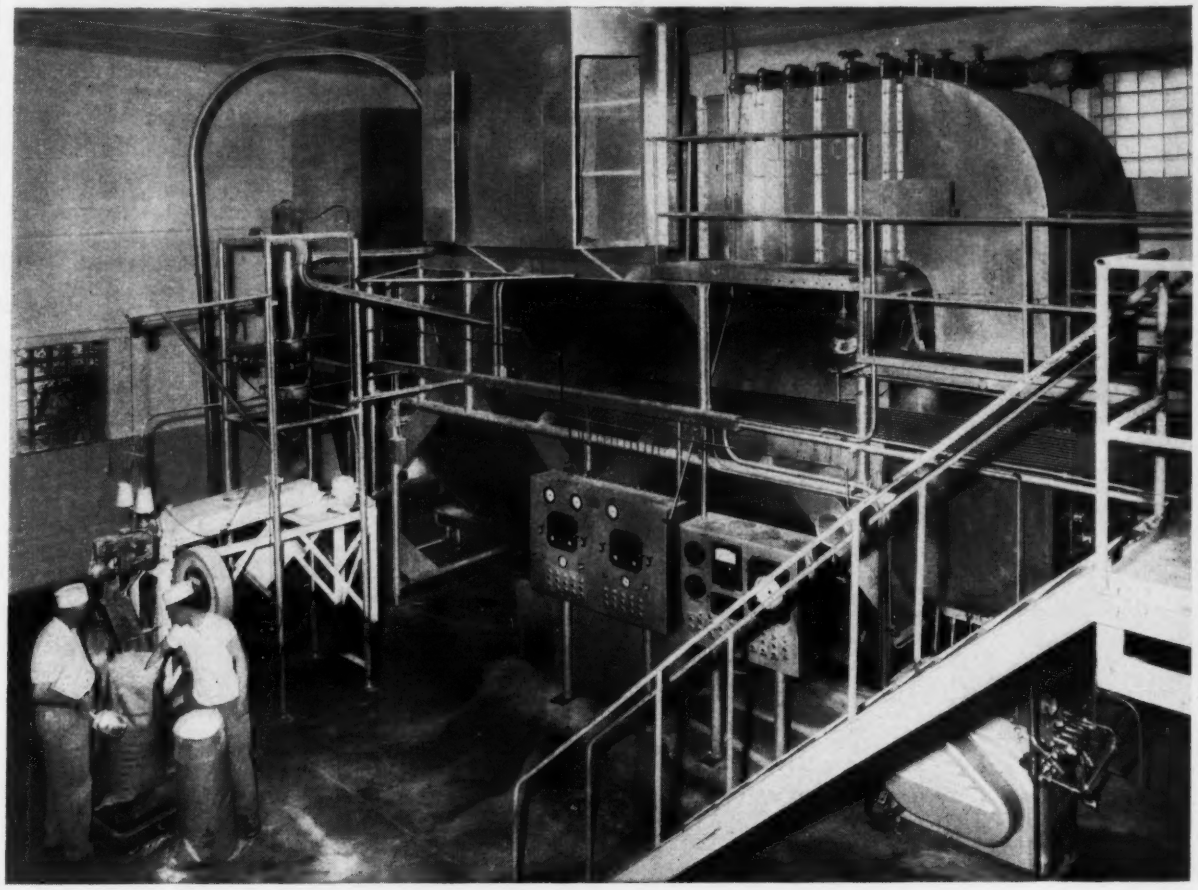
Complete unit is contained within a dust-tight sheet metal cabinet.

(Weigh-Feeder Machine is a development of Syntron Company, 111 Lexington Ave., Homer City, Pa.)
5818 on Reader Service Slip.

Buffalo Co-op Creamery specified:

"TAYLOR EQUIPPED AS USUAL"

for their Blaw-Knox Equipment



Taylor Evaporator Control System (panel at left) and Taylor Spray Dryer System (at right) maintain uniformity at Buffalo Co-op Creamery, Buffalo, Minn.

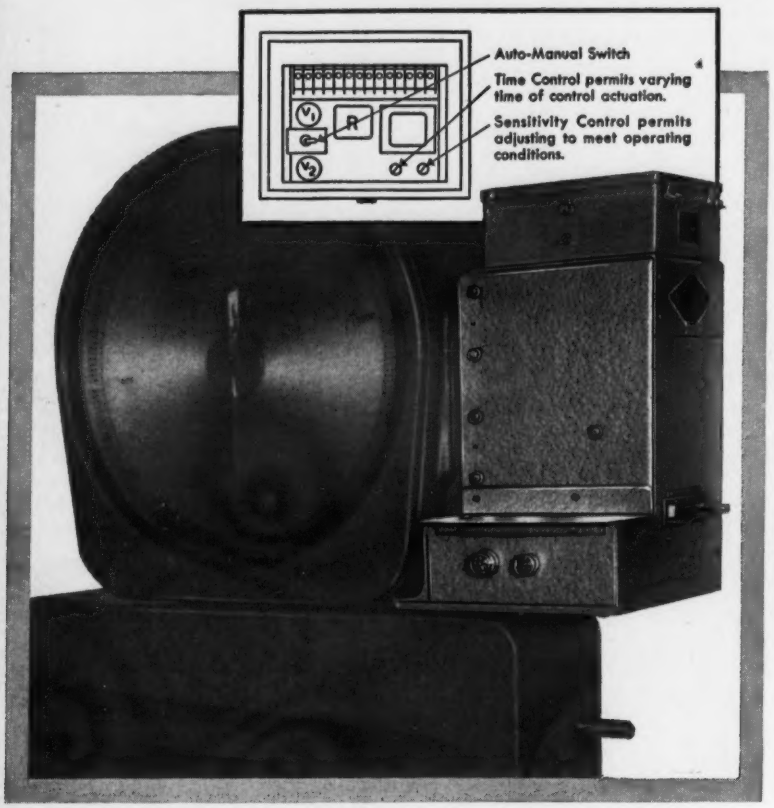
More and more profit-making dairies are relying on Taylor to maintain quality while raising production. At the Buffalo Co-op Creamery, Buffalo, Minnesota, where powdered milk production was recently increased by 65%, a coordinated system of Taylor Instruments regulates liquid level and pressure in the Blaw-Knox Double Effect Evaporator while another Taylor system records the temperature of the steam-heated air in the Blaw-Knox Spray Dryer, to help maintain moisture content of the dried product.

Such leaders in the industry depend on Taylor instruments for the best of reasons—they help boost profits by maintaining a uniformly high quality product. If you're considering installation of new equipment, or modernizing your present equipment, be sure to specify "Taylor equipped as usual". Taylor Instrument Companies, Rochester, N. Y., and Toronto, Ont.

Taylor Instruments MEAN ACCURACY FIRST

5819 on Reader Service Slip.

NEW Fairbanks-Morse Electronic Weight Detector


Auto-Manual Switch
Time Control permits varying time of control actuation.
Sensitivity Control permits adjusting to meet operating conditions.

Prevents incorrect weighing . . . stops costly errors!

With the new Electronic Weight Detector, true weight of any load can be automatically obtained and recorded without need of a weighman. Where a weighman is used, it is impossible for him to record incorrect weights or start a sequence at the wrong time. When desired, a flip of the switch can disengage the Weight Detector entirely from the system. *This is the first fully-reliable control of its kind available in the scale industry.*

To completely automate your weighing—to be sure that your weights are correct—to protect yourself by completely policing your entire weighing operation—contact your nearby Fairbanks-Morse Field Engineer, or write directly to Fairbanks, Morse & Co., 600 South Michigan Ave., Chicago 5, Illinois for complete information.

See Sweet's Plant Engineering File for full line of F-M Scales

FAIRBANKS-MORSE
a name worth remembering when you want the BEST

SCALES • PUMPS • DIESEL, DUAL FUEL AND GAS ENGINES • ELECTRIC MOTORS
GENERATORS • COMPRESSORS • MAGNETOS • HOME WATER SYSTEMS

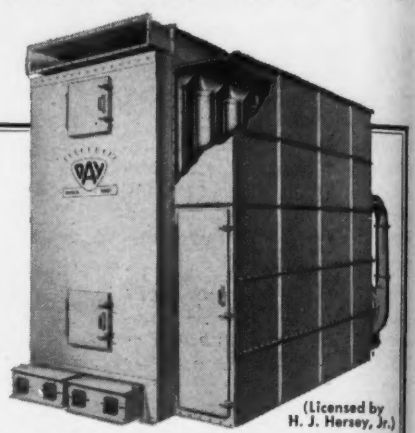
5820 on Reader Service Slip.

DAY

DUST CONTROL NEWS

Largest selling filter of its type in the world!

DAY "AC" Reverse Jet Dust Filter



Cutaway view of DAY "AC"—available housed or unhoused—for pressure or suction.

(Licensed by H. J. Hersey, Jr.)

Better Dust Control Systems Cost Less When They Include a DAY "AC" Reverse Jet Filter!

Less equipment needed

Filtering rates for a DAY "AC" are 10 to 20 cubic feet of air per square foot of filter media. These are about five times greater than old style filters. This means you get maximum filtration from a minimum filter investment. Because virtually 100% of the DAY "AC" is operating at all times, no money is wasted on intermittent or standby units. One DAY "AC" will filter and keep separated, dusts from up to 10 different sources!

Less maintenance

You know all equipment requires *normal* inspection and care. But you'll find many DAY filters have been on the job for 5, 6, 7 or even 8 years that have had no repairs whatsoever. In short, *the Day "AC" is built* to last! They have an "appetite" for work and a reputation for dependability and long life.

Less space needed

Because of smaller diameter felt filter tubes the DAY "AC" gives you a greater air handling capacity in less space. DAY "AC" filters occupy up to 50% less space—an important consideration for plants of any size!

99.99+% filtering efficiency

The real "pay off" on DAY "AC" filters is their ability to clean dust laden air with near perfect efficiency! Even "tough" materials such as carbon black or atomic energy materials are filtered with optimum effectiveness.

For additional information about the DAY "AC" reverse jet dust filter write toDAY for Bulletin F-75. It also contains pages of useful air engineering data.

The* DAY *Company

SOLD in UNITED STATES by
The DAY SALES Company
848 Third Avenue N.E.
Minneapolis 13, Minnesota

MADE and SOLD in CANADA by
The DAY Company of Canada Limited
Rexdale (Toronto), Ontario, Canada
Ft. William, Ontario, Canada

Representatives in Principal Cities

EQUIPMENT ONLY OR A COMPLETE SYSTEM

5821 on Reader Service Slip.

NEW! ERIEZ
HI-VI
VIBRATORY
FEEDERS &
BIN VIBRATORS

specially constructed for
HAZARDOUS, DUSTY LOCATIONS

First Mill Mutual Acceptable electro-permanent magnetic vibratory equipment at economical prices!

Vibratory Feeders – accurately feed and control bulk materials, from ounces to tons. Completely enclosed drive element, built-in glass fiber springs, impotted epoxy sealed electrical coil. Needs no rectifier.

Unit (Bin) Vibrators – keep hard-to-move materials flowing through bins, chutes, etc. Exclusive pinpointed vibration impact. Completely enclosed and sealed. No sliding or rotating parts to wear. No rectifier needed.

WRITE FOR BIG VIBRATORY FACT FILE
Eriez Mfg. Co., 75-YB Magnet Dr., Erie, Pa.

ERIEZ

5822 on Reader Service Slip.

new literature Classified Listing

- Equipment
- Ingredients
- Supplies

Starred* items below have been more extensively reviewed elsewhere in the magazine. Key numbers in the last line will help locate these reviews, which are numbered in sequence. Items followed by dagger† indicate literature offered by current advertisers — see index, page 119.

Processing Equipment, Accessories

Tips on choosing rotary feeders*, 4 pp, (Bul I-43) Sprout, Waldron & Co., Inc.
5679 on Reader Service Slip.

Slices whole barrel of cheese in one operation*, 2 pp, General Machinery Corp.
5681 on Reader Service Slip.

Silicone defoamer now costs less*, 4 pp, (Bul 4-403A) Dow Corning Corp.
5683 on Reader Service Slip.

Blenders and mixers for powders, pastes and liquids*, 8 pp, (Bul 800-159) The Cleveland Automatic Machine Co., Div. The J. H. Day Co.
5672 on Reader Service Slip.

Pyrogen-free, sterile water from boiler steam*, 8 pp, (Bul IN 201) Wilmot Castle
5682 on Reader Service Slip.

How to handle fluids to maintain, protect delicate flavors†, (Bul 968) Pfaudler Permutit, Inc.
5823 on Reader Service Slip.

Provides complete information on dust control system†, (Bul F-75) The Day Company
5824 on Reader Service Slip.

Compressor provides oil-free, pure air†, (Bul CRC-10) Gardner Denver
5825 on Reader Service Slip.

Corrosion resistant processing equipment†, (Bulletins) Lee Metal Products Co.
5826 on Reader Service Slip.

Highly intimate blends in 1 to 2 minutes†, (Bul 080B) Sturtevant Mill Co.
5827 on Reader Service Slip.

Removes fine iron and tramp iron from most liquid-handling pipelines†, (Lit) Eriez Mfg. Co.
5828 on Reader Service Slip.

Automatic refrigeration which prevents ice or frost accumulation†, (Bul 105) Niagara Blower Co.
5829 on Reader Service Slip.

Four-cylinder ammonia compressors for heavy duty, 20 pp, (Bul 651-C) Frick Company
5830 on Reader Service Slip.

Various types of water-treating equipment and their basic operating principles, 24 pp, (Bul 615) Elgin Softener Corp.
5831 on Reader Service Slip.

Multiple-bed water conditioners, 4 pp, (Cat) Water Refining Co., Inc.
5832 on Reader Service Slip.

Non-woven synthetic fiber felts, 8 pp, (Brochure) Troy Blanket Mills
5833 on Reader Service Slip.

Continuous UHT pasteurization system for ice cream mix, 4 pp, (Bul E-1431) The Creamery Package Mfg. Co.
5834 on Reader Service Slip.

Ingredients, Food Additives

How to use ascorbic acid in cured meats*, 24 pp, Hoffmann-La-Roche, Inc.
5725 on Reader Service Slip.

Meat curing aid and antioxidant*, 4 pp, (Tech Bul 202) Wallerstein
5728 on Reader Service Slip.

Sugar types and uses*, 26 pp, Sugar Information, Inc.
5726 on Reader Service Slip.

Adding Fat to Feeds*, 4 pp, Sprout, Waldron
5735 on Reader Service Slip.

Lists amount of flavoring for specific foods*, 20 pp, (Cat F 59/60) Dragoco, Inc.
5727 on Reader Service Slip.

Soluble spices†, ("The Changing World of Food") Dodge & Olcott, Inc.
5835 on Reader Service Slip.

Food-grade antioxidants for numerous applications†, (9 Buls) Eastman Chemical Co.
5836 on Reader Service Slip.

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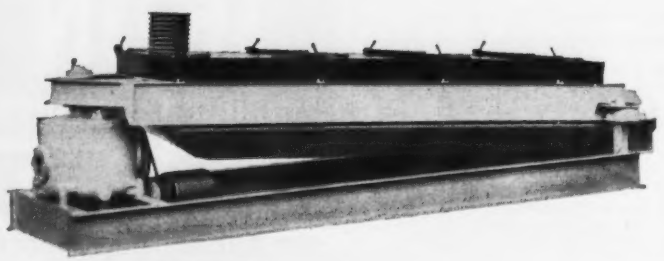

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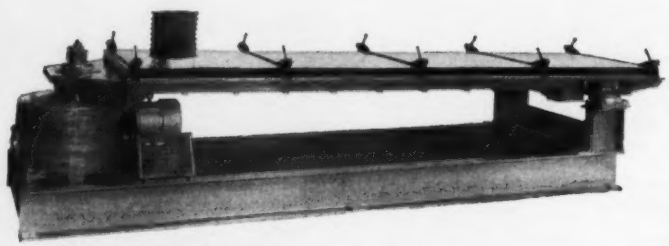

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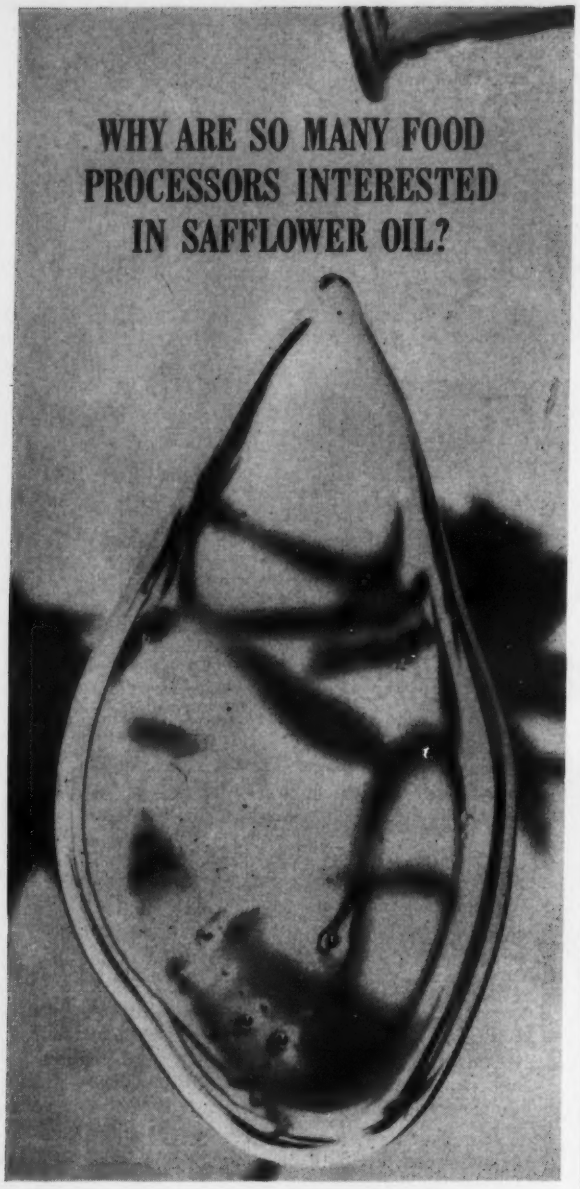

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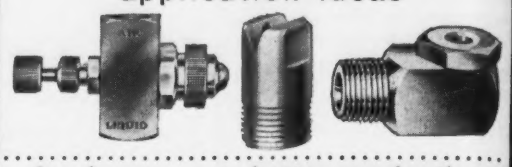

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Modernize standards

(*Continued from page* 21)

identity standards for peanut butter.

Our conclusion is that (1) identity and (2) economic integrity for peanut butter are established by specifying a minimum content of peanuts. For the purpose of the present discussion suppose we choose the figure of 87%.

One area for (3) potential consumer confusion would appear to be in the enriched product. Hence, we would specify that if there is to be a vitamin-enriched peanut butter a minimum of certain vitamins should be required.

Otherwise we argue that it

(*Continued on next page*)

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Absorption, % by wgt.	260 (water)	170 (oil)
pH	9.6	7.5
Wet density (lbs/cu. ft.)	17.4	22.5
150 Mesh (residue)	Trace	Trace
Moisture % (free) avg.	6.5	3.5

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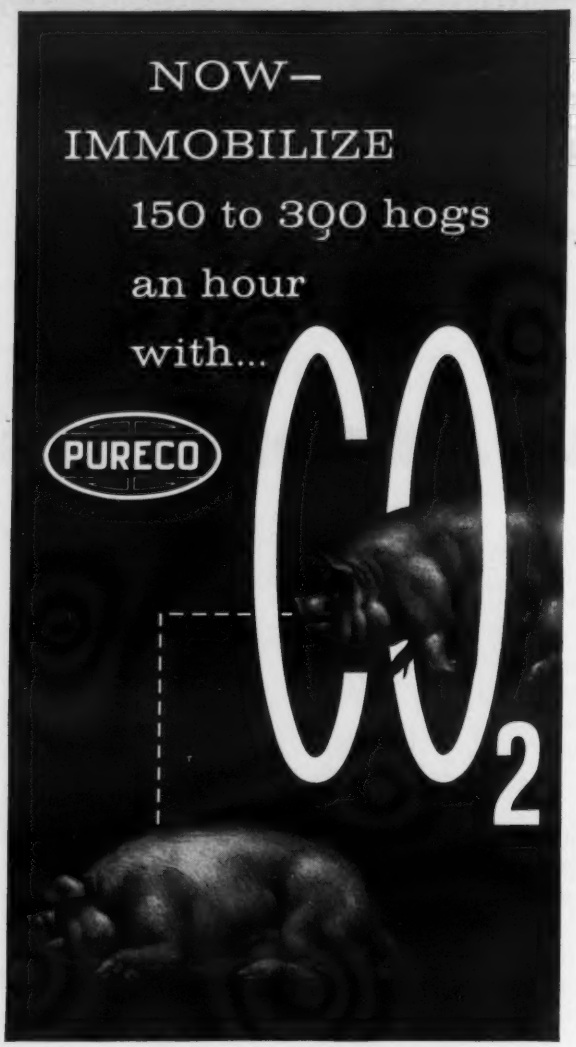

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Modernize standards

(*Continued from preceding page*)

is entirely unnecessary for the FDA to specify which optional ingredients may be used, and thus end up with a legal recipe for peanut butter.

Why shouldn't the consumer rather than the FDA decide which product formulations with a minimum of 87% peanuts are acceptable?

As to which optional ingredients need to be listed on the label to promote honesty and fair dealing, we are not prepared to say. But we will argue that the specific label designations for ingredients which the standard for peanut butter set up should be in the interests of the consumer. That is, should readily be understandable by consumers.

Any labeling requirement that confuses consumers does not in our opinion promote honesty and fair dealing no matter what legal technicalities may be advanced.

The point has been raised as to whether any added oil (including hydrogenated oils) should be limited to peanut oil.

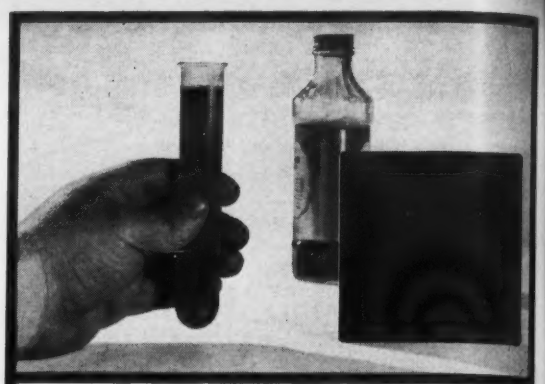
Such a consideration, we maintain, is one involving primarily the selfish interests of various farm groups. As such it has no business being considered in FDA identity standards, which are supposed to be in the interests of consumers.

The consumer who wants an all-peanut peanut butter for esthetic or other reasons can obtain it by reading the label of brands now on the market.

Those consumers who are primarily concerned with flavor and nutritive quality and value will discover that with other factors constant, it is impossible to distinguish between a peanut butter with added peanut oil and one with added cottonseed oil.

So why should the FDA be concerned?

Now that the Food Additive Law of 1958 effectively controls safety of food ingredients why in the promulgation of standards should the FDA be concerned with any factors other than identity, economic integrity, and elimination of consumer confusion? END



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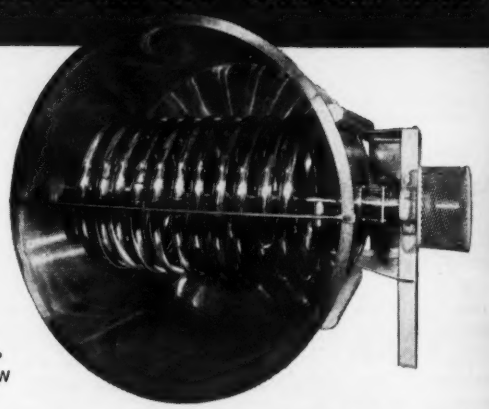

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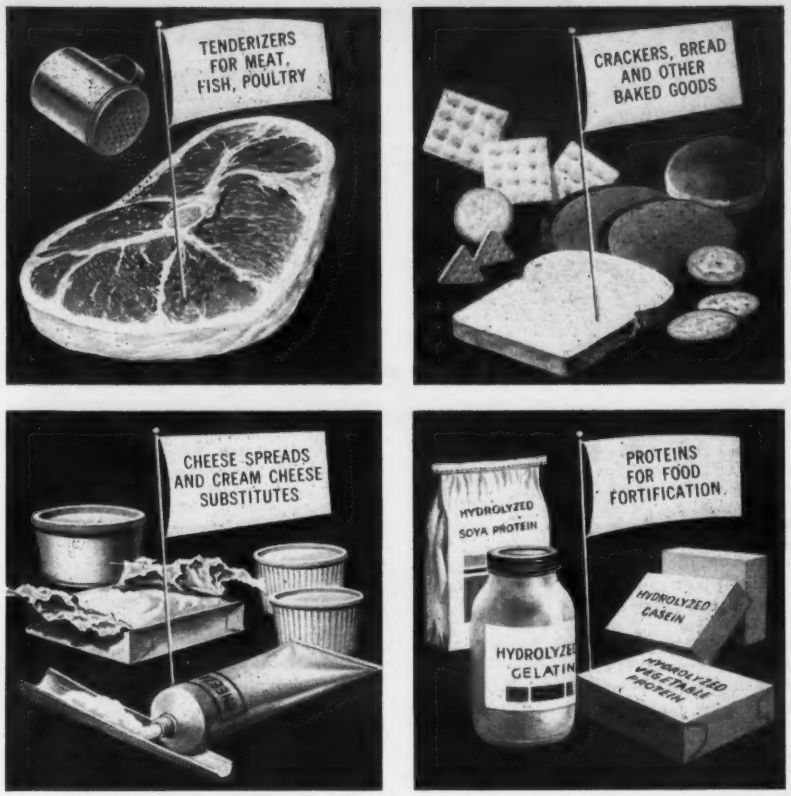

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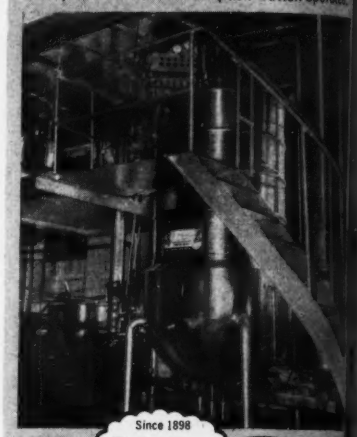

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November 1959

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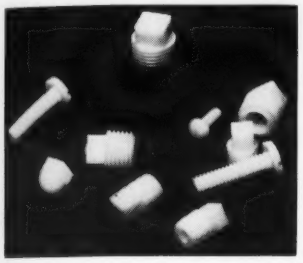
that's interesting

Plastic puts pressure on metal pipe plugs

Industrial pipe plugs of new Du Pont "Delrin" (polyformaldehyde) acetal resin, now undergoing final field tests, promise to compete economically with plated or non-plated brass, high-grade carbon steel and stainless steel. Under certain conditions of size and volume, "Delrin" plugs also may compete with plain steel plugs.



Seals against pressures as high as 10,000 psi have been achieved in tests, and pressures of 500 psi were held consistently, even after repeated cycling from room temperature to 250 F. Hollowed-out center of plug actually increases thread-sealing ability as pressure is applied.

Resin's dense crystalline structure makes the plugs hard and rigid but not brittle; resilient; resistant to solvents and water swelling.

Then there's the traveling salesman . . .

. . . employed by almost any food company, who received nearly 9c per mile for driving his own car on company business. The food industry's 1959 national average of 8.93c per mile shades the 8.91c per mile for all industries — also a record high and a 15 per cent increase over 1957's 7.72c per mile.

Companies whose salesmen average more than 18,000 miles per yr over the road generally pay 8c or 9c per mile. Those operating fleets primarily in cities often pay 10c and even 11c per mile.

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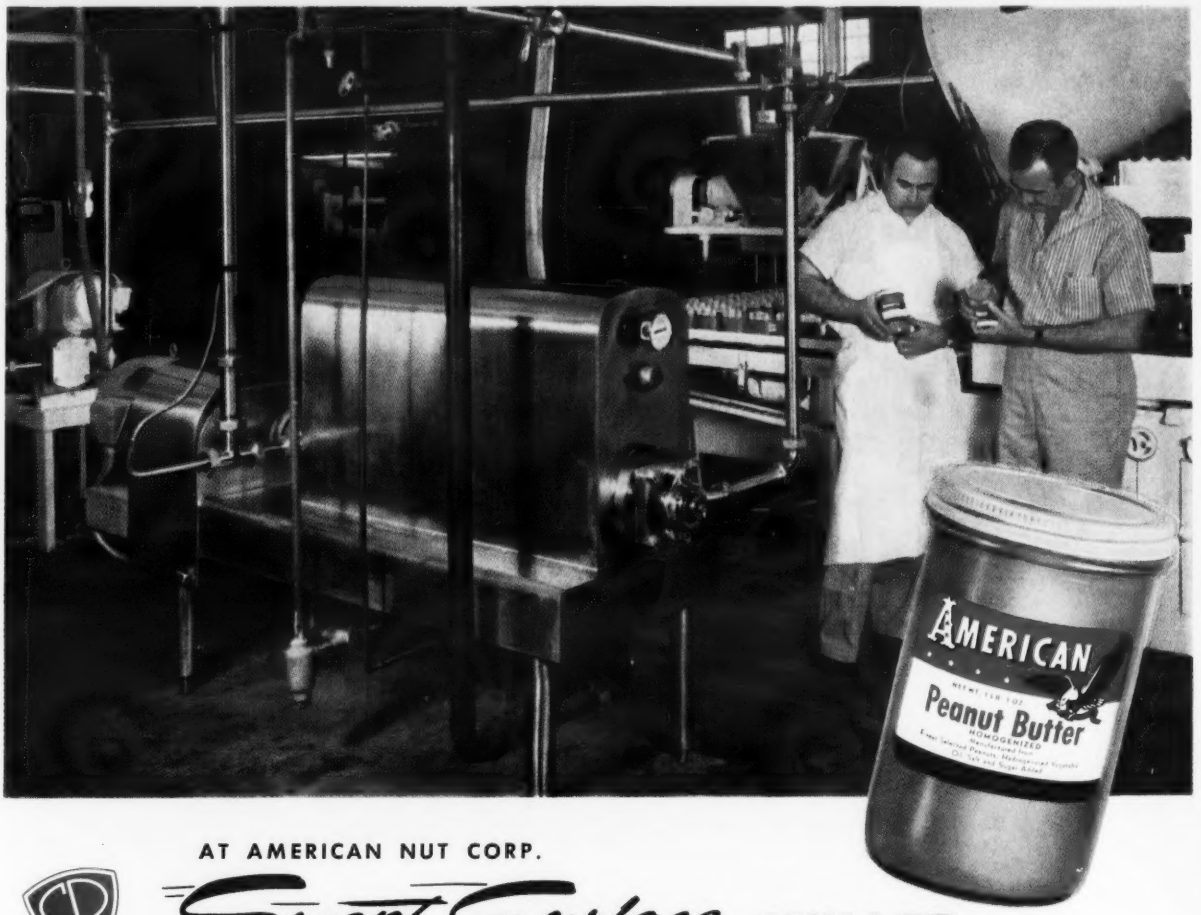

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Manager Zan Burroughs (right) and R. Bond inspect product at Lewisville, Texas plant.

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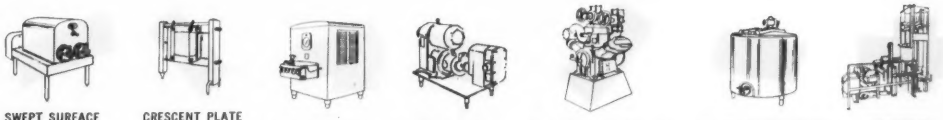

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